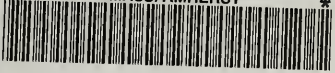


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# DEPARTMENT OF PUBLIC WORKS

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YEAR ENDING NOVEMBER 30

1920


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The Commonwealth of Massachusetts

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ANNUAL REPORT

OF THE

DEPARTMENT OF PUBLIC WORKS

FOR THE

YEAR ENDING NOVEMBER 30, 1920



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# The Commonwealth of Massachusetts

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## DEPARTMENT OF PUBLIC WORKS.

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*To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.*

Pursuant to the provisions of law, I have the honor as Commissioner of Public Works to submit the first annual report of the Department of Public Works for the fiscal year ending Nov. 30, 1920.

The divisions created by law to cover the activities of the Department have been organized in accordance with chapter 350 of the General Acts of 1919, which provided as follows:—

SECTION 111. The Massachusetts highway commission, existing under authority of chapter three hundred and forty-four of the General Acts of nineteen hundred and seventeen and acts in amendment thereof and in addition thereto, and the commission on waterways and public lands existing under authority of chapter two hundred and eighty-eight of the General Acts of nineteen hundred and sixteen, are hereby abolished. All the rights, powers, duties and obligations of said commissions are hereby transferred to and shall hereafter be exercised and performed by the department of public works established by this act, which shall be the lawful successor of said commissions.

SECTION 112. The department of public works shall be under the supervision and control of a commissioner, to be known as commissioner of public works, and four associate commissioners, all of whom shall be appointed by the governor, with the advice and consent of the council. The commissioner shall be appointed for the term of three years. Of the associate commissioners first appointed, two shall be appointed for the term of one year and two for the term of two years. Thereafter as the terms expire the governor shall appoint the commissioner and the associate commissioners for the term of three years, shall fill any vacancy for the unexpired term, and may, with the consent of the council, remove the commissioner or any of the associate commissioners. The commissioner shall receive such annual salary, not exceeding seven thousand five hundred dollars, and the associate commissioners such annual salaries not exceeding six thousand dollars, as the governor and council may determine.

SECTION 113. The department shall be organized in two divisions, namely, a division of highways and a division of waterways and public

lands. The said divisions shall have, exercise and perform, the rights, powers, duties and obligations, respectively, of the Massachusetts highway commission and the commission on waterways and public lands, except as is otherwise provided herein. The governor shall, at the time of making the first appointments under the preceding section, designate two of the associate commissioners to have charge of the division of highways and two to have charge of the division of waterways and public lands. Thereafter, whenever a change in the associate commissioners occurs, the governor may make a new designation. The commissioner shall be entitled to act as a member of both divisions, and when present shall act as chairman of the division. The concurrence of two members shall be necessary in any official act of either division.

SECTION 114. The commissioner shall be the executive and administrative head of the department. He shall approve all contracts made by either division, and may require any of the expenditures of either division to be submitted to him for approval. He may, subject to the civil service law and rules, where they apply, appoint, assign to divisions, transfer and remove such officials and employees as the work of the department may require, and, subject to the provisions of chapter two hundred and twenty-eight of the General Acts of nineteen hundred and eighteen, and the rules and regulations made thereunder, and to the approval of the governor and council where that is required by law, fix the compensation of the said persons.

SECTION 115. The commissioner shall appoint, and may remove, subject to the approval of the governor and council, an official to be known as registrar of motor vehicles, and may, with like approval, fix his compensation. The registrar of motor vehicles shall have, exercise and perform all the rights, powers, duties and obligations of the Massachusetts highway commission relative to motor vehicles and to the operation thereof, as defined by chapter five hundred and thirty-four of the acts of nineteen hundred and nine, and acts in amendment thereof and in addition thereto. Any person aggrieved by a regulation, ruling or decision of said registrar may, within ten days thereafter, appeal from such regulation, ruling or decision to the commissioners of the division of highways who may, after a hearing, order such regulation, ruling or decision to be affirmed, modified or annulled.

SECTION 116. All rules and regulations under provisions of existing law within the jurisdiction of the division of highways, the division of waterways and public lands or the registrar of motor vehicles shall be drafted by the commissioners having charge of said divisions or by said registrar, shall be submitted to the commissioner and associate commissioners sitting as a board, and shall take effect, subject to the provisions of chapter three hundred and seven of the General Acts of nineteen hundred and seventeen, when approved by them, and at such time as they shall designate. Said board shall also have power to make all needful rules and regulations for carrying out the provisions of this act relating to the said department.

Under the terms of the act the following original appointments were made: —

Commissioner of Public Works, for three years, JOHN N. COLE.

*Division of Highways.*

Associate Commissioner, for one year, FRANK D. KEMP.

Associate Commissioner, for two years, JAMES W. SYNAN.

*Division of Waterways and Public Lands.*

Associate Commissioner, for one year, JESSE B. BAXTER.

Associate Commissioner, for two years, RICHARD K. HALE.

In the reorganization, changes in personnel and changes in the work assigned to different employees have resulted in a co-ordination of work that is believed to promise greatly increased efficiency in handling the duties and responsibilities of the Department. In carrying out the work of reorganization the following assignments have been made: —

Executive Secretary for the Department, FREDERICK N. WALES.

*Division of Highways.*

Chief Engineer, ARTHUR W. DEAN.

Construction Engineer, FRANKLIN C. PILLSBURY.

District Engineers: —

District No. 1, Berkshire County, GEORGE A. CURTIS.

District No. 2, Franklin and Hampshire counties, H. D. PHILLIPS.

District No. 3, Hampden and Worcester counties, JOHN A. JOHNSTON.

District No. 4, Middlesex County, F. D. SABIN.

District No. 5, Essex and Suffolk counties, D. H. DICKINSON.

District No. 6, Norfolk and Bristol counties, R. W. COBURN.

District No. 7, Plymouth, Barnstable, Dukes and Nantucket counties,  
GEORGE H. DELANO.

Recording Secretary for the Division, MARY A. RILEY.

Financial Secretary for the Division, FRED FAIR.

*Division of Waterways and Public Lands.*

Chief Engineer, FRANK W. HODGDON.

Assistant to the Chief Engineer, for Boston Harbor, JOHN N. FERGUSON.

Assistant to the Chief Engineer, for harbors and waterways outside  
Boston Harbor, FRANCIS L. SELLEW.

Recording Secretary for the Division, EDNA F. TOWNSEND.

Financial Secretary for the Division, CORA I. ALLEN.

Bridge Engineer for the Department, WILLIAM F. WILLIAMS.

*Registry of Motor Vehicles.*

Registrar, FRANK A. GOODWIN.

Chief Clerk, CHARLES R. GILLEY.

Chief of Inspection Force, ALBERT S. OLSSON.

A detailed report is presented herewith, covering the activities for the year of the Division of Highways, the Division of Waterways and Public Lands, and the Registry of Motor Vehicles.

JOHN N. COLE,  
*Commissioner.*



## DIVISION OF HIGHWAYS.

### APPROPRIATIONS.

The appropriations for the construction and repair of State highways during the period 1903 to 1919, inclusive, were —

1903 . . . . .	\$2,250,000 00 <sup>1</sup>
1907 . . . . .	2,500,000 00 <sup>1</sup>
1912 . . . . .	5,000,000 00 <sup>1</sup>
1919 . . . . .	4,000,000 00 <sup>2</sup>
<hr/>	
Total . . . . .	\$13,750,000 00

The total of such appropriations during the period 1894 to Nov. 30, 1919, inclusive, was \$18,250,000.

The appropriations for maintenance during the period 1914 to 1919, inclusive, paid from the treasury of the Commonwealth, were —

1914 . . . . .	\$350,000 00 <sup>3</sup>
1915 . . . . .	350,000 00 <sup>3</sup>
1916 . . . . .	415,000 00 <sup>3</sup>
1917 . . . . .	404,547 86 <sup>3</sup>
1918 . . . . .	258,462 80
1919 . . . . .	312,524 64
<hr/>	
Total . . . . .	\$2,090,535 30

The total of such appropriations during the period 1903 to Nov. 30, 1919, inclusive, was \$3,604,701.96.

The appropriations made in 1920 and relating to the Department of Public Works, Division of Highways, are included in various items in chapters 225 and 629, Acts of 1920, and also set forth in chapter 572, Acts of 1920, as follows: —

<sup>1</sup> To cover expense of construction for a period of five years.

<sup>2</sup> To cover expense of construction for a period of four years, 1920-23, inclusive.

<sup>3</sup> Includes appropriations for widening.

*Chapter 225, Acts of 1920, making Appropriations for the Maintenance of Departments, Boards, Commissions, Institutions and Certain Activities of the Commonwealth, for Interest, Sinking Fund, and Serial Bond Requirements, and for Certain Permanent Improvements.*

SERVICE OF THE DEPARTMENT OF PUBLIC WORKS.

Item		
587	For the salaries of the commissioner and the four associate commissioners, a sum not exceeding . . . . .	\$30,500 00
587½	For personal services of clerks and assistants to the commissioner, a sum not exceeding . . . . .	9,000 00
	Division of Highways (the following appropriations for the operation and maintenance of this division are made from the receipts of the Motor Vehicle Fees Fund):	
588	For the personal services of the chief engineer, engineers and office assistants, including certain clerks and stenographers, a sum not exceeding . . . . .	40,000 00
589	For travelling expenses of the commissioners, when travelling in the discharge of their official duties, a sum not exceeding . . . . .	3,500 00
590	For services other than personal, including printing the annual report and necessary office supplies and equipment, a sum not exceeding . . . . .	12,000 00
591	For the care, repair and storage, replacement and purchase of road-building machinery and tools, a sum not exceeding . . . . .	375,000 00
592	For the suppression of gypsy and brown tail moths on state highways, a sum not exceeding . . . . .	13,000 00
593	For the maintenance of state highways and the improvement and construction of town ways and certain through routes, in accordance with the provisions of existing laws, and for the payment of any claims for damages occurring on state highways, with the approval of the attorney-general, a sum not exceeding two million five hundred fifty-seven thousand seven hundred sixty dollars and fifty-six cents from receipts in the Motor Vehicle Fees Fund, and in addition thereto the sum of three hundred fifty-eight thousand eight hundred eighty-nine dollars and forty-four cents, representing the amount received in the treasury from assessments on cities and towns for the maintenance of state highways . . . . .	2,916,650 00
594	For the maintenance and operation of the Newburyport bridge and the Brightman street bridge in Fall River, in accordance with the provisions of existing laws, a sum not exceeding . . . . .	18,000 00
597	For the purpose of enabling the department of public works to secure federal aid for the construction of highways, a sum not exceeding one million dollars in addition to any other funds which the department has available for the purpose; of the said sum two hundred thousand dollars shall be payable from receipts from counties for assessments on highways previously constructed, and the balance from the general fund . . . . .	1,000,000 00



*Chapter 629, Acts of 1920, in Addition to the General Appropriation Act making Appropriations to supplement Certain Items therein, and for Certain New Activities and Projects.*

SERVICE OF THE DEPARTMENT OF PUBLIC WORKS.

Item

- 587 For the salaries of the commissioner and the four associate commissioners, a sum not exceeding five hundred dollars, the same to be in addition to the appropriation heretofore made for the purpose . . . . . \$500 00

*Division of Highways.*

- 588 For the personal services of the chief engineer, engineers and office assistants, a sum not exceeding . . . . . 900 00

- 594 For the maintenance and operation of the Newburyport bridge and the Brightman street bridge in Fall River, a sum not exceeding . . . . . 680 00

Severally to be in addition to any appropriations heretofore made for the purpose, and to be paid from the receipts from motor vehicle fees.

- 594 $\frac{1}{2}$  For the care of snow on highways as provided by chapter four hundred and eighty-eight of the acts of the present year, a sum not exceeding fifty thousand dollars, the same to be paid from the receipts from motor vehicle fees . . . . . 50,000 00

- 594 $\frac{1}{2}$  For the state's proportion of the expenses authorized for special highway improvement under the provisions of certain special acts of the present year, a sum not exceeding eighty-five thousand dollars, to be paid from the receipts from motor vehicle fees, provided that any contributions from counties, cities, towns and individuals required by the said special acts, shall be credited to the account, with the appropriation for the state's proportion when the said contributions are paid into the state treasury, and shall be used in accordance with the provisions of the said acts; and the highway division is hereby authorized to expend, without further appropriation, any money contributed by the counties, cities and towns of the commonwealth and to make expenditures in anticipation of assessments to be levied upon any counties, cities and towns, for the improvement of highways under chapters five hundred and nineteen, five hundred and twenty, five hundred and twenty-one, five hundred and twenty-two, five hundred and thirty-six, five hundred and sixty-six and five hundred and seventy-one of the acts of the present year. Any unexpended balance of these special funds may be used in the succeeding year for the same purpose . . . . . 85,000 00

DEFICIENCIES.

For deficiencies in certain appropriations of previous years in certain items as follows:

*Division of Public Works.*

- For maintenance and operation of the Somerset and Newburyport bridges, the sum of . . . . . 182 24

Chapter 572, Acts of 1920, section 1, authorizes the Division to expend an additional sum of \$1,000,000 before Nov. 30, 1924, for the purpose of completing the construction of certain highways in the five western counties of the State under the provisions of chapter 221, General Acts of 1915.

## EXPENDITURES.

Summary of expenditures by the Division during the fiscal year ending Nov. 30, 1920: —

For construction of State highways, under chapter 344, General Acts of 1917, Part 1 . . . . .	\$1,410,478 33
For maintenance of State highways, from Motor Vehicle Fees Fund, under chapter 344, General Acts of 1917, Part 1, and chapter 225, Acts of 1920, item 593 . . . . .	1,621,332 10
For maintenance of State highways from revenue appropriations, under chapter 344, General Acts of 1917, Part 1, and chapter 225, Acts of 1920, item 593 . . . . .	358,889 44
For maintenance and improvement of town and county ways, under chapter 525, Acts of 1910 . . . . .	518,396 47
For construction and repair of ways in certain towns, under chapter 344, General Acts of 1917, Part 1, section 23 . . . . .	65,475 47
For highways in the five western counties, under chapter 221, General Acts of 1915, chapter 225, Acts of 1920, and chapter 572, Acts of 1920 . . . . .	212,443 77
For repair and improvement of public ways, exclusive of State highways, in certain towns, under chapter 155, General Acts of 1918 . . . . .	229,950 57
For the construction of a State highway in Hingham, under chapter 213, General Acts of 1916 . . . . .	4,919 86
For the improvement of Prospect Street in Leominster, under chapter 236, General Acts of 1918 . . . . .	4,695 16
For the improvement of Prospect Street in Leominster, under chapter 231, Special Acts of 1919 . . . . .	5,778 55
For the construction and improvement of a highway in Holland and Brimfield, under chapter 232, Special Acts of 1919 . . . . .	5,392 35
For the improvement of a highway between Holden and the Wachusett Mountain State Reservation, under chapter 233, Special Acts of 1919 . . . . .	25,852 57
For the improvement of a highway in Middlefield, leading from Chester to Worthington, under chapter 240, Special Acts of 1919 . . . . .	7,113 73
For the improvement of a highway between Westborough and Grafton, under chapter 335, General Acts of 1919 . . . . .	4,000 00

For the construction of a highway in North Brookfield, leading to New Braintree, under chapter 336, General Acts of 1919 . . . . .	\$16,531 10
For the further improvement of a highway in Hubbardston and Rutland, under chapter 337, General Acts of 1919 . . . . .	27,954 64
For the construction of a State highway in Holyoke, under chapter 338, General Acts of 1919 . . . . .	1,488 28
For the improvement of a highway leading from Milford to Southborough through Hopkinton, under chapter 339, General Acts of 1919 . . . . .	7,354 25
For investigation relative to the construction of a State highway in Williamstown, under chapter 62, Resolves of 1919 . . . . .	82 70
For the improvement of a highway in Clinton, under chapter 520, Acts of 1920, and chapter 629, Acts of 1920, section 2, item 594½ . . . . .	127 75
For the improvement of a highway in Holden, under chapter 521, Acts of 1920, and chapter 629, Acts of 1920, item 594½ . . . . .	385 66
For the improvement of a highway in Templeton, under chapter 522, Acts of 1920, and chapter 629, Acts of 1920, item 594½ . . . . .	5,905 48
For the construction of a highway in Chester, Middlefield, Peru and Hinsdale, under chapter 566, Acts of 1920, and chapter 629, Acts of 1920, item 594½ . . . . .	318 94
For the care of snow on highways, under chapter 488, Acts of 1920, and chapter 629, Acts of 1920, item 594¼ . . . . .	18,923 00
For the maintenance and operation of the bridge over Merrimack River between Newburyport and Salisbury, under chapter 716, Acts of 1912, and chapter 225, Acts of 1920, item 594 . . . . .	7,957 60
For the maintenance and operation of the bridge over Taunton Great River at Brightman Street in Fall River, under chapter 717, Acts of 1912, and chapter 225, Acts of 1920, item 594, . . . . .	8,068 19
For the care, repair and storage, replacement and purchase of road-building machinery and tools, under chapter 225, Acts of 1920, item 591 . . . . .	333,441 58
For the suppression of gypsy and brown-tail moths on State highways, under chapter 225, Acts of 1920, item 592 . . . . .	13,000 00
General expenses, under chapter 225, Acts of 1920, items 588, 589, 590 . . . . .	55,739 33
Under highway trust fund, in town of Sandwich . . . . .	7,450 47
Total, . . . . .	\$4,979,447 34

## CO-OPERATIVE WORK — SUPERVISION OF EXPENDITURES.

The Division has supervised the expenditure, during the year, by cities, towns and counties, under chapter 525, Acts of 1910, chapter 344, General Acts of 1917, Part 1, and chapter 155, General Acts of 1918, of approximately \$1,220,987.57 for co-operative work, in repairing, maintaining and improving certain public ways, and for other road work for which the towns and cities made contributions. All such work was carried out in conformity with contracts, specifications and plans approved by the Division.

## PETITIONS, MEETINGS AND HEARINGS.

In addition to the regular weekly meetings of the Division throughout the year, numerous hearings and conferences have been held, including the annual meeting and hearing in the several counties in the Commonwealth, for the open discussion of questions relative to the public ways, as required by chapter 344, General Acts of 1917, Part 1, section 2; hearings on petitions for the relocation or extension of street railway tracks on State Highways in Boston, Blackstone, Easton, Lawrence, Methuen, Northbridge, Somerset and Shrewsbury; on appeals from action taken by the Registrar of Motor Vehicles on revocation of certain licenses to operate motor vehicles; on the subject of removal of snow from highways; on the matter of billboard advertising; and on appeal from action taken by the town of Avon changing the name of a certain street.

Petitions were received and contracts signed during the year, as follows: —

	Petitions.	Contracts.
State highways . . . . .	13	29
Work under chapter 525, Acts of 1910 . . . . .	79	112
Work under chapter 344, General Acts of 1917, Part 1, section 23	27	27
Work under chapter 155, General Acts of 1918 . . . . .	99	98
Totals . . . . .	218	266



## GENERAL STATEMENT AS TO SURVEYS, PLANS, ESTIMATES AND OTHER WORK DURING THE YEAR.

Preliminary surveys, plans and estimates were made on contemplated State highways in 34 towns, covering an aggregate distance of 61.03 miles. Lines and grade for construction work on State highways were made in 30 towns, covering an aggregate distance of 53.04 miles, and for resurfacing work in 7 towns, covering an aggregate distance of 7.60 miles.

Final surveys were made on completed State highways in 16 towns, covering an aggregate distance of 17.74 miles, and on roads other than State highways in 24 towns, covering an aggregate distance of 22.84 miles.

On "small town" and Motor Vehicle Fees Fund work, preliminary surveys, including plans and profiles, were made in 34 towns, covering an aggregate distance of 24.54 miles. Lines and grade for construction have been made on these roads in 47 towns, covering an aggregate distance of 37.20 miles. In addition to the above, surveys have been made in 5 towns, covering an aggregate distance of 3.16 miles, said roads to be constructed by the towns; and lines and grade for construction for this class have been made in 3 towns, covering an aggregate distance of .97 mile.

In connection with work in the five western counties of the State surveys have been made in 1 town, covering an aggregate distance of .45 mile, and lines and grade for construction have been made in 4 towns, covering an aggregate distance of 8.13 miles.

Layout plans have been made in 24 towns, covering an aggregate distance of 42.17 miles.

Plans to accompany decrees for street railway locations on State highways have been made in 7 towns.

Special surveys, plans, etc., have been made in 15 towns, covering an aggregate distance of 17.37 miles; and lines and grade for construction have been made in 9 towns, covering an aggregate distance of 7.06 miles.

## STATE HIGHWAY CONSTRUCTION.

Construction has been completed during the year ending Nov. 30, 1920, on about 22.4 miles of State highway, portions of which were laid out in 1919. Construction was commenced, but not completed, on over 22 miles of road in 11 cities and towns. Layouts were made of about 42.17 miles of State highway in 24 cities and towns. The total length of State highways at the end of the year was 1,353.96 miles.

## TREES ON STATE HIGHWAYS.

During the last sixteen years 44,720 trees have been planted on the borders of State highways, of which 590 were planted during the year covered by this report, the Division continuing the policy of planting quick-growing trees and hedges to replace guard rails.

## PERMITS.

There were 1,117 permits issued during the year for opening or occupying state highways.

## HIGHWAYS.

In addition to the 22.40 miles of State highway, construction was completed on 11.83 miles of highways under the provisions of the "small town" act (chapter 344, General Acts of 1917, Part 1, section 23); 52.09 miles of highways under chapter 525, Acts of 1910; and 34.92 miles of highways under other acts, making a total of 121.24 miles.

Of the above highways, .77 of a mile was of water-bound macadam; 39.54 miles of gravel; 6.08 miles of sand bound with asphalt; 38.04 miles of bituminous macadam, that is, macadam with bituminous binder incorporated in the top course; 5.06 miles of water-bound macadam with an oil or tar surface applied; 5.93 miles of crushed gravel with the top surface bound with asphalt; 16.40 miles of cement concrete; 4.65 miles of gravel with an oil surface applied; and 4.76 miles were earth highways, that is, surfaced with the best available material.

## RESURFACING AND WIDENING.

During the year 27.41 miles of State highway were resurfaced; 2.43 miles widened but not resurfaced; and 14.94 miles widened and resurfaced. The total mileage represents completed work.

## ENGINEERING ADVICE TO MUNICIPAL AUTHORITIES.

The Division furnished, without charge, engineering advice to 28 cities and towns in the Commonwealth, in accordance with the provisions of chapter 344, General Acts of 1917, Part 1, section 2.

## STATE HIGHWAYS.

Chapter 344, General Acts of 1917, Part 1, section 5, provides that —

If the county commissioners of a county, the mayor and aldermen of a city or the selectmen of a town adjudge that the public necessity and convenience require that the commonwealth lay out and take charge of a new or an existing way as a highway in whole or in part, in their county, city or town, they may apply by a petition in writing to the [Massachusetts Highway] commission, requesting that said way be laid out and taken charge of by the commonwealth.

Petitions under chapter 344 aforesaid have been received as follows: —

SELECTMEN OF GREAT BARRINGTON. Section of road leading from Sheffield to Great Barrington, beginning at the boundary between Great Barrington and Sheffield, at the northerly end of the State highway already constructed in Sheffield and extending northerly about two miles. Received Dec. 16, 1919.

SELECTMEN OF NORWELL. Section of road beginning at the boundary between Hingham and Norwell at Queen Ann Corners, and extending southeasterly to the boundary between Norwell and Hanover at Assinippi Village at the northwesterly end of the State highway already constructed in Hingham. Received Dec. 23, 1919.

SELECTMEN OF HINGHAM. Section of road locally known as Whiting Street, extending from the boundary between Weymouth and Hingham, to the boundary between Hingham and Norwell. Received Dec. 23, 1919.

SELECTMEN OF HUNTINGTON. Road beginning at the Worthington line and extending along the River road to Huntington Village, thence southwesterly to the State highway leading from Chester to Russell. Received April 20, 1920. Layout was made May 11, 1920, and contract entered into.

SELECTMEN OF WINCHENDON. The main road leading northerly from Winchendon Village and extending to the New Hampshire line at a point westerly of the tracks of the Boston & Maine Railroad. Received Jan. 21, 1920.

SELECTMEN OF NATICK. Worcester Street extending from the boundary between Natick and Wellesley to the boundary between Natick and Framingham, about four miles in length. Received Dec. 29, 1919.

MAYOR AND ALDERMEN OF MEDFORD. Road leading from South Street to the Medford-Winchester line, and known as Winthrop Street. Received Jan. 9, 1920.





Norwell concrete road, 1920.



**SELECTMEN OF LEXINGTON.** Road beginning at Lowell Street, at its intersection with the present State highway, known as Summer Street Extension; thence northerly on Lowell Street to Maple Street; thence on Maple Street to Massachusetts Avenue; thence on Massachusetts Avenue to Middle Street, the present State highway. Received Jan. 10, 1920.

**SELECTMEN OF ACUSHNET.** Road leading from Acushnet Village north to Long Plain Village in Acushnet. Received Feb. 4, 1920.

**SELECTMEN OF SHREWSBURY.** Road leading from the junction of Maple Avenue and Boston Turnpike, said junction being about one mile easterly from the Worcester-Shrewsbury line; thence along said Turnpike to Shrewsbury-Northborough line. Received Feb. 4, 1920.

**MAYOR AND ALDERMEN OF LAWRENCE.** Road leading from the junction of Andover Street and the Salem Turnpike at Wilson's Corner; thence northwesterly along said turnpike in the town of North Andover to and along Winthrop Avenue to South Union Street. Received July 13, 1920.

**COUNTY COMMISSIONERS OF BARNSTABLE COUNTY.** Road leading from the existing State highway in Provincetown, in part over a new location to a point on Bradford Street about 200 feet easterly from the junction of Bradford and Allerton streets. Received Nov. 9, 1920. Layout was made Nov. 9, 1920. No contract has been entered into.

**COUNTY COMMISSIONERS OF WORCESTER COUNTY.** A road leading from the junction of the Brookfield road and Main Street in East Brookfield to the westerly end of the existing State highway, on the Spencer road, so called. Received Nov. 20, 1920.

The expenditures during the year in various counties for the construction of State highways were: —

COUNTY.	Amount.
Barnstable . . . . .	\$33,446 59
Berkshire . . . . .	169,268 42
Bristol . . . . .	52,637 96
Essex . . . . .	268,684 21
Franklin . . . . .	156,538 99
Hampden . . . . .	28 67
Hampshire . . . . .	203,392 71
Middlesex . . . . .	268,029 94
Norfolk . . . . .	28,496 67
Plymouth . . . . .	102,878 97
Worcester . . . . .	127,075 20

Details of the foregoing expenditures follow: —

*Barnstable County.*

Barnstable . . . . .	\$31,789 29
Mashpee . . . . .	196 72
Provincetown . . . . .	1,263 84
Sandwich . . . . .	196 74

*Berkshire County.*

Clarksburg . . . . .	9 10
Dalton . . . . .	4,194 23
Egremont . . . . .	47,314 80
Great Barrington . . . . .	12,359 11
Lanesborough . . . . .	37,944 16
Pittsfield . . . . .	4 55
Sheffield . . . . .	11,714 68
Stockbridge . . . . .	4 55
Windsor . . . . .	55,723 24

*Bristol County.*

Acushnet . . . . .	88 73
Fairhaven . . . . .	98 64
Freetown . . . . .	9,700 54
Taunton . . . . .	42,750 05

*Essex County.*

Andover . . . . .	5,697 28
Danvers . . . . .	57,714 51
Lynnfield . . . . .	18,199 31
Peabody . . . . .	77,321 93
Saugus . . . . .	109,751 18

*Franklin County.*

Greenfield . . . . .	109,755 57
Northfield . . . . .	12,123 78
Shelburne . . . . .	34,659 64

*Hampden County.*

Blandford . . . . .	28 67
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*Hampshire County.*

Amherst . . . . .	16,845 96
Cummington . . . . .	45,109 66
Huntington . . . . .	70,287 91
Northampton . . . . .	124 44
Ware . . . . .	71,024 74

*Middlesex County.*

Ashby . . . . .	\$6,361 82
Billerica . . . . .	117,846 63
Groton . . . . .	19,527 69
Lexington . . . . .	6,176 22
Littleton . . . . .	89,150 51
Lowell . . . . .	5 89
Wayland . . . . .	21,442 38
Woburn . . . . .	7,518 80

*Norfolk County.*

Braintree . . . . .	28,496 67
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*Plymouth County.*

Hingham . . . . .	39,459 02
Norwell . . . . .	50,220 57
Wareham . . . . .	13,199 38

*Worcester County.*

Athol . . . . .	7,750 18
Barre . . . . .	3,215 77
Charlton . . . . .	30,120 75
Leicester . . . . .	10,176 04
Northbridge . . . . .	38,900 38
Oxford . . . . .	4,678 02
Petersham . . . . .	29,898 61
Rutland . . . . .	58 12
Uxbridge . . . . .	13 30
Warren . . . . .	2,264 03

Total . . . . .	\$1,410,478 33
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## CONSTRUCTION AND RESURFACING OF STATE HIGHWAYS.

(Chapter 344, General Acts of 1917, Part 1.)

The following contracts were entered into during the year for the construction and resurfacing of State highways in various municipalities:—

*Acton-Littleton.*

July 6, 1920, contract made with George E. Greenough of Acton for the construction of 2.18 miles of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$98,874.

To Dec. 1, 1920, about 98 per cent of the work had been completed.

Expenditure during 1920, \$97,592.97.

*Andover.*

Aug. 31, 1920, contract<sup>1</sup> made with George T. Seabury, Inc., of Providence, R. I., for the construction of 869 feet of State highway, and 1,682 feet of town road, consisting of bituminous macadam 21 to 24 feet wide. The proposal amounted to \$39,757.

Work completed Nov. 16, 1920.

Expenditure during 1920, \$39,406.64.

*Attleboro.*

April 6, 1920, contract made with the Lane Construction Corporation of Meriden, Conn., for the surfacing of 7,382 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$28,178.

Work completed July 20, 1920.

Expenditure during 1920, \$31,146.47.

*Barre.*

Oct. 26, 1920, contract made with G. Louis Burnham Company of Bristol, Conn., for the construction of 1,239 feet of State highway, this contract providing only for grading and drainage. The proposal amounted to \$4,461.50.

To Dec. 1, 1920, about 55 per cent of the work had been completed.

Expenditure during 1920, \$2,826.65.

*Billerica.*

April 28, 1920, contract made with James H. Fannon of Somerville for the construction of 3,168 feet of State highway of concrete construction, and a reinforced concrete bridge across Concord River. The proposal amounted to \$123,241.50.

To Dec. 1, 1920, about 95 per cent of the work had been completed.

Expenditure during 1920, \$103,586.76.

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<sup>1</sup> Subsequently assigned to the Lane Construction Corporation of Meriden, Conn.



*Danvers-Peabody.*

April 6, 1920, contract made with Hamlin & Nelson of Salem for the construction of 3,070 feet of State highway on Andover Street in Danvers and 2,777 feet in Peabody, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$43,922.50.

Work practically completed.

Expenditure during 1920, \$38,278.73.

*Eastham-Wellfleet.*

May 11, 1920, contract made with Thomas & Murphy of Keene, N. H., for the surfacing of 10.69 miles of State highway, consisting of bituminous concrete 18 feet wide. The proposal amounted to \$166,047.

To Dec. 1, 1920, about 90 per cent of the work had been completed.

Expenditure during 1920, \$147,365.69.

*Egremont.*

June 29, 1920, contract made with the Lanesborough Corporation of Meriden, Conn., for the construction of 6,147 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$39,783.50.

Work completed Nov. 30, 1920.

Expenditure during 1920, \$41,589.54.

*Huntington.*

May 11, 1920, contract made with Cordner & Montague of Springfield for the construction of 16,300 feet of State highway, consisting of bituminous macadam 18 feet wide, and a reinforced concrete bridge across Westfield River. The proposal amounted to \$182,232.

Work completed.

Expenditure during 1920, \$61,782.82.

*Leicester.*

April 13, 1920, contract made with McGuire & McGourty, Inc., of Worcester for surfacing 6,100 feet of State highway,

consisting of cement concrete 18 feet wide. The proposal amounted to \$44,601.50.

To Dec. 1, 1920, about 90 per cent of the work had been completed.

Expenditure during 1920, \$30,972.86.

Aug. 10, 1920, contract made with John MacDonald Construction Company of Boston for the construction of 3,300 feet of State highway, consisting of cement concrete 24 feet wide. The proposal amounted to \$51,731.

To Dec. 1, 1920, about 40 per cent of the work had been completed.

Expenditure during 1920, \$8,944.70.

#### *Littleton.*

April 20, 1920, contract made with the Framingham Construction and Supply Company for the construction of 1,212 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$8,630.

Work completed July 6, 1920.

Expended during 1920, \$9,703.89.

#### *Littleton-Groton.*

Dec. 23, 1919, contract made with John W. Duff, Incorporated, of Boston for the construction of 13,879 feet of State highway, consisting of cement concrete surface 18 feet wide in Littleton, and 20,389 feet in Groton. The proposal amounted to \$246,131.50.

To Dec. 1, 1920, about 35 per cent of the work had been completed.

Expended during 1920, \$85,823.86.

#### *Oxford.*

Oct. 26, 1920, contract made with the Hassam Paving Company of Worcester for the construction of 5,000 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$41,440.

To Dec. 1, 1920, about 10 per cent of the work had been completed.

Expended during 1920, \$4,111.96.



*Saugus-Lynnfield-Peabody-Danvers (Newburyport Turnpike).*

May 24, 1920, contract made with the Hassam Paving Company of Worcester for the construction of 27,022 feet of State highway (Newburyport Turnpike), consisting of cement concrete 18 feet wide. The proposal amounted to \$229,098.40.

To Dec. 1, 1920, about 40 per cent of the work had been completed.

Expenditure during 1920, \$86,171.36.

*Shrewsbury.*

Oct. 13, 1920, contract made with Alexander Palladino of Newton for the surfacing of 700 feet of State highway, consisting of bituminous macadam, there being two roadways, each 20 feet wide. The proposal amounted to \$9,413.50.

Work practically completed.

Expenditure during 1920, \$7,026.45.

*Ware.*

April 28, 1920, contract made with Luigi C. Carchia of Boston for the construction of 13,864 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$102,486.50.

To Dec. 1, 1920, about 65 per cent of the work had been completed.

Expenditure during 1920, \$62,430.49.

*Wayland.*

April 6, 1920, contract made with John H. McCusker of Waltham for the construction of 1,800 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$13,370.

Work completed July 20, 1920.

Expenditure during 1920, \$18,847.77.

*Westfield.*

Aug. 24, 1920, contract made with the Standard Engineering Company of Toledo, Ohio, for the reconstruction of the wooden

floor of the bridge across Little River, Westfield. The proposal amounted to \$9,271.96.

Work practically completed.

Expenditure during 1920, \$52.63.

*Woburn.*

Sept. 28, 1920, contract made with the city of Woburn for the construction of 8,240 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$48,413.50.

To Dec. 1, 1920, about 25 per cent of the work had been completed.

Expenditure during 1920, \$6,609.

MAINTENANCE OF STATE HIGHWAYS (FROM MOTOR VEHICLE FEES FUND).

(Chapter 344, General Acts of 1917, Part 1; chapter 225, Acts of 1920.)

The expenditures during the year in various counties were: —

COUNTY.	Amount.
Barnstable . . . . .	\$236,345 31
Berkshire . . . . .	250,189 53
Bristol . . . . .	131,460 54
Dukes . . . . .	12,548 66
Essex . . . . .	87,820 07
Franklin . . . . .	123,926 62
Hampden . . . . .	35,044 02
Hampshire . . . . .	29,367 49
Middlesex . . . . .	301,513 80
Nantucket . . . . .	829 22
Norfolk . . . . .	72,059 16
Plymouth . . . . .	71,712 88
Suffolk . . . . .	3,629 14
Worcester . . . . .	263,247 73

Details of the foregoing expenditures follow: —

*Barnstable County.*

Barnstable . . . . .	\$5,820 51
Bourne . . . . .	1,918 45
Brewster . . . . .	1,410 57
Chatham . . . . .	2,194 01
Dennis . . . . .	1,373 30
Eastham . . . . .	112,317 17
Falmouth . . . . .	3,390 70
Harwich . . . . .	755 41
Mashpee . . . . .	589 02
Orleans . . . . .	1,333 11
Provincetown . . . . .	889 63
Sandwich . . . . .	3,414 11
Truro . . . . .	36,337 79
Wellfleet . . . . .	58,959 16
Yarmouth . . . . .	5,642 37

*Berkshire County.*

Adams . . . . .	1,326 75
Becket . . . . .	46,734 80
Cheshire . . . . .	5,527 57
Clarksburg . . . . .	2,824 93
Dalton . . . . .	1,899 08
Egremont . . . . .	1,075 20
Florida . . . . .	15,084 53
Great Barrington . . . . .	1,811 41
Hancock . . . . .	66,301 02
Hinsdale . . . . .	1,262 02
Lanesborough . . . . .	1,177 81
Lee . . . . .	3,508 50
Lenox . . . . .	4,263 51
North Adams . . . . .	11,976 93
Pittsfield . . . . .	72,254 57
Richmond . . . . .	5,326 01
Savoy . . . . .	2,583 19
Sheffield . . . . .	2,120 12
Stockbridge . . . . .	1,358 51
Washington . . . . .	159 25
Williamstown . . . . .	514 92
Windsor . . . . .	1,098 90

*Bristol County.*

Acushnet . . . . .	2,168 98
Attleboro . . . . .	42,253 50
Berkley . . . . .	880 56

Dartmouth . . . . .	\$4,100 56
Dighton . . . . .	2,118 90
Easton . . . . .	110 48
Fairhaven . . . . .	676 21
Fall River . . . . .	128 77
Freetown . . . . .	779 06
Mansfield . . . . .	1,410 73
North Attleborough . . . . .	3,238 97
Norton . . . . .	3,464 46
Raynham . . . . .	3,119 78
Rehoboth . . . . .	3,495 16
Seekonk . . . . .	35,959 91
Somerset . . . . .	4,661 89
Swansea . . . . .	13,705 96
Taunton . . . . .	3,144 86
Westport . . . . .	6,041 80

*Dukes County.*

Chilmark . . . . .	3,925 90
Edgartown . . . . .	1,543 46
Gay Head . . . . .	4,143 91
Oak Bluffs . . . . .	1,432 05
Tisbury . . . . .	279 73
West Tisbury . . . . .	1,223 61

*Essex County.*

Amesbury . . . . .	2,232 75
Andover . . . . .	3,396 95
Beverly . . . . .	2,003 88
Danvers . . . . .	154 48
Essex . . . . .	686 41
Gloucester . . . . .	1,671 99
Groveland . . . . .	2,098 53
Hamilton . . . . .	2,898 23
Haverhill . . . . .	6,385 67
Ipswich . . . . .	1,679 58
Lawrence . . . . .	1,111 85
Lynn . . . . .	1,699 99
Merrimac . . . . .	2,432 69
Methuen . . . . .	5,638 26
Middleton . . . . .	252 30
Newbury . . . . .	2,116 63
Newburyport . . . . .	375 69
North Andover . . . . .	4,376 88
Rockport . . . . .	543 06

Rowley . . . . .	\$1,589 12
Salem . . . . .	809 97
Salisbury . . . . .	2,655 05
Saugus . . . . .	1,037 55
Swampscott . . . . .	532 00
Wenham . . . . .	34,452 57
West Newbury . . . . .	4,987 99

*Franklin County.*

Ashfield . . . . .	1,698 88
Bernardston . . . . .	36,970 57
Buckland . . . . .	3,466 23
Charlemont . . . . .	13,015 37
Colrain . . . . .	2,602 70
Conway . . . . .	2,985 88
Deerfield . . . . .	5,540 37
Erving . . . . .	4,041 49
Gill . . . . .	108 29
Greenfield . . . . .	33,320 04
Montague . . . . .	3,082 03
Northfield . . . . .	6,214 22
Orange . . . . .	1,693 63
Shelburne . . . . .	7,474 58
Sunderland . . . . .	778 96
Whately . . . . .	933 38

*Hampden County.*

Agawam . . . . .	340 64
Blandford . . . . .	2,650 77
Brimfield . . . . .	2,384 57
Chester . . . . .	3,841 35
Chicopee . . . . .	2,535 23
East Longmeadow . . . . .	1,105 83
Holyoke . . . . .	1,201 26
Monson . . . . .	508 58
Palmer . . . . .	6,764 02
Russell . . . . .	6,777 47
Wales . . . . .	1,594 63
West Springfield . . . . .	694 33
Westfield . . . . .	3,186 67
Wilbraham . . . . .	1,458 67

*Hampshire County.*

Amherst . . . . .	2,901 91
Belchertown . . . . .	1,664 09

Cummington . . . . .	\$466 23
Easthampton . . . . .	827 65
Goshen . . . . .	1,226 07
Granby . . . . .	3,952 22
Hadley . . . . .	2,152 74
Hatfield . . . . .	266 52
Huntington . . . . .	3,325 64
Northampton . . . . .	1,306 24
South Hadley . . . . .	4,010 80
Southampton . . . . .	527 68
Ware . . . . .	3,998 04
Williamsburg . . . . .	2,741 66

*Middlesex County.*

Acton . . . . .	106,197 29
Arlington . . . . .	401 41
Ashby . . . . .	7,899 66
Ashland . . . . .	835 61
Ayer . . . . .	566 11
Bedford . . . . .	149 23
Billerica . . . . .	1,145 27
Boxborough . . . . .	1,809 76
Burlington . . . . .	3,121 95
Chelmsford . . . . .	8,838 21
Concord . . . . .	1,178 29
Dracut . . . . .	3,011 75
Framingham . . . . .	1,771 18
Groton . . . . .	250 66
Holliston . . . . .	1,586 21
Hudson . . . . .	435 66
Lexington . . . . .	1,543 66
Lincoln . . . . .	865 60
Littleton . . . . .	29,604 32
Lowell . . . . .	2,734 53
Malden . . . . .	12 30
Marlborough . . . . .	3,427 44
Medford . . . . .	309 67
Melrose . . . . .	354 04
Natick . . . . .	1,379 34
Newton . . . . .	351 30
North Reading . . . . .	1,502 14
Pepperell . . . . .	1,849 50
Reading . . . . .	2,265 40
Shirley . . . . .	244 03
Somerville . . . . .	325 76

Stoneham . . . . .	\$31,950 30
Sudbury . . . . .	1,907 75
Tewksbury . . . . .	4,259 99
Townsend . . . . .	5,231 48
Tyngsborough . . . . .	3,465 53
Watertown . . . . .	542 79
Wayland . . . . .	1,962 69
Westford . . . . .	6,399 54
Weston . . . . .	1,118 22
Wilmington . . . . .	55,008 01
Winchester . . . . .	1,769 02
Woburn . . . . .	1,901 20

*Nantucket County.*

Nantucket . . . . .	829 22
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*Norfolk County.*

Avon . . . . .	357 31
Bellingham . . . . .	892 80
Braintree . . . . .	1,196 15
Canton . . . . .	2,733 82
Cohasset . . . . .	3,338 04
Dedham . . . . .	1,466 46
Dover . . . . .	950 66
Foxborough . . . . .	1,357 54
Franklin . . . . .	954 80
Holbrook . . . . .	1,062 52
Milton . . . . .	576 58
Needham . . . . .	1,247 66
Norfolk . . . . .	1,734 09
Norwood . . . . .	2,454 12
Plainville . . . . .	2,474 50
Quincy . . . . .	10,395 94
Randolph . . . . .	6,179 91
Sharon . . . . .	622 29
Stoughton . . . . .	9,261 68
Walpole . . . . .	5,029 11
Wellesley . . . . .	117 98
Westwood . . . . .	268 23
Weymouth . . . . .	11,652 73
Wrentham . . . . .	5,734 24

*Plymouth County.*

Abington . . . . .	1,921 96
Bridgewater . . . . .	3,753 16

Brockton . . . . .	\$548 08
Duxbury . . . . .	1,414 38
East Bridgewater . . . . .	5,113 39
Hanover . . . . .	1,205 75
Hingham . . . . .	2,930 39
Kingston . . . . .	548 94
Lakeville . . . . .	5,361 79
Marion . . . . .	1,856 53
Marshfield . . . . .	10,471 02
Mattapoisett . . . . .	5,811 37
Middleborough . . . . .	13,803 06
Pembroke . . . . .	893 45
Plymouth . . . . .	1,113 17
Rochester . . . . .	2,160 43
Rockland . . . . .	1,430 69
Scituate . . . . .	1,305 21
Wareham . . . . .	5,636 64
West Bridgewater . . . . .	2,144 24
Whitman . . . . .	2,289 23

*Suffolk County.*

Boston . . . . .	1,403 43
Chelsea . . . . .	274 99
Revere . . . . .	1,950 72

*Worcester County.*

Ashburnham . . . . .	20,171 02
Athol . . . . .	1,813 85
Auburn . . . . .	2,928 57
Barre . . . . .	5,555 09
Blackstone . . . . .	1,888 21
Brookfield . . . . .	2,223 03
Charlton . . . . .	4,995 43
Douglas . . . . .	1,466 27
Dudley . . . . .	2,328 51
Fitchburg . . . . .	807 93
Gardner . . . . .	2,322 82
Grafton . . . . .	3,883 00
Hardwick . . . . .	913 06
Harvard . . . . .	1,353 95
Holden . . . . .	2,864 15
Hopedale . . . . .	203 51
Lancaster . . . . .	1,052 03
Leicester . . . . .	38,817 24
Leominster . . . . .	1,811 10
Lunenburg . . . . .	86,578 10



Mendon . . . . .	\$482 42
Milford . . . . .	1,216 00
Millbury . . . . .	1,608 86
Millville . . . . .	1,301 62
New Braintree . . . . .	134 11
North Brookfield . . . . .	793 70
Northborough . . . . .	1,781 07
Northbridge . . . . .	753 09
Oakham . . . . .	1,924 40
Oxford . . . . .	2,124 68
Paxton . . . . .	4,071 69
Petersham . . . . .	3,483 65
Phillipston . . . . .	517 63
Princeton . . . . .	1,126 66
Rutland . . . . .	3,366 62
Shrewsbury . . . . .	9,424 42
Southborough . . . . .	1,619 31
Southbridge . . . . .	216 78
Spencer . . . . .	883 76
Sterling . . . . .	2,726 42
Sturbridge . . . . .	1,234 78
Sutton . . . . .	3,302 82
Templeton . . . . .	5,567 62
Upton . . . . .	1,639 84
Uxbridge . . . . .	2,429 53
Warren . . . . .	763 63
Webster . . . . .	807 18
West Boylston . . . . .	765 29
West Brookfield . . . . .	1,603 50
Westborough . . . . .	2,433 65
Westminster . . . . .	5,765 14
Winchendon . . . . .	11,466 45
Worcester . . . . .	1,934 54
Total, . . . . .	<sup>1</sup> \$1,619,694 17

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<sup>1</sup> To this amount should be added items totalling \$1,637.93 for marking routes, and for tar and oil analysis, etc.

# MAINTENANCE OF STATE HIGHWAYS (FROM REVENUE APPROPRIATIONS).

(Chapter 344, General Acts of 1917, Part 1; chapter 225, Acts of 1920.)

The expenditures during the year in various counties were:—

COUNTY.	Amount.
Barnstable . . . . .	\$28,010 24
Berkshire . . . . .	32,322 68
Bristol . . . . .	32,809 71
Dukes . . . . .	4,662 97
Essex . . . . .	50,495 54
Franklin . . . . .	16,125 00
Hampden . . . . .	16,009 76
Hampshire . . . . .	11,070 18
Middlesex . . . . .	54,756 05
Nantucket . . . . .	4,130 91
Norfolk . . . . .	23,395 22
Plymouth . . . . .	16,438 18
Suffolk . . . . .	3,445 53
Worcester . . . . .	65,217 47

Details of the foregoing expenditures follow:—

## *Barnstable County.*

Barnstable . . . . .	\$3,704 87
Bourne . . . . .	2,171 39
Brewster . . . . .	1,319 08
Chatham . . . . .	2,178 42
Dennis . . . . .	1,694 68
Eastham . . . . .	1,312 10
Falmouth . . . . .	3,709 63
Harwich . . . . .	1,055 36
Mashpee . . . . .	591 36
Orleans . . . . .	1,053 75
Provincetown . . . . .	1,526 39
Sandwich . . . . .	1,749 10
Truro . . . . .	2,182 54
Wellfleet . . . . .	1,886 19
Yarmouth, North } . . . . .	1,875 38
Yarmouth, South }	

*Berkshire County.*

Adams . . . . .	\$311 41
Becket . . . . .	1,664 86
Cheshire . . . . .	1,222 21
Clarksburg . . . . .	569 84
Dalton . . . . .	720 41
Egremont . . . . .	1,383 66
Florida . . . . .	7,223 95
Great Barrington . . . . .	2,296 99
Hancock . . . . .	179 54
Hinsdale . . . . .	429 18
Lanesborough . . . . .	365 74
Lee . . . . .	2,800 98
Lenox . . . . .	1,688 63
New Marlborough . . . . .	59 30
North Adams . . . . .	4,831 14
Pittsfield . . . . .	1,395 53
Richmond . . . . .	783 50
Savoy . . . . .	511 38
Sheffield . . . . .	1,592 85
Stockbridge . . . . .	1,853 09
Williamstown . . . . .	288 49
Windsor . . . . .	150 00

*Bristol County.*

Acushnet . . . . .	998 04
Attleboro . . . . .	1,462 00
Berkley . . . . .	427 81
Dartmouth . . . . .	2,903 09
Dighton . . . . .	1,134 90
Easton . . . . .	184 11
Fairhaven . . . . .	489 55
Fall River . . . . .	—
Freetown . . . . .	272 22
Mansfield . . . . .	159 41
North Attleborough . . . . .	2,831 92
Norton . . . . .	1,749 98
Raynham . . . . .	1,408 79
Rehoboth . . . . .	1,677 76
Seekonk . . . . .	1,563 78
Somerset . . . . .	4,087 38
Swansea . . . . .	7,815 23
Taunton . . . . .	1,554 89
Westport . . . . .	2,088 85

*Dukes County.*

Chilmark . . . . .	\$1,187 55
Edgartown . . . . .	922 10
Gay Head . . . . .	723 75
Oak Bluffs . . . . .	1,181 99
Tisbury . . . . .	13 80
West Tisbury . . . . .	633 78

*Essex County.*

Amesbury . . . . .	4,205 10
Andover . . . . .	2,084 80
Beverly . . . . .	2,387 30
Danvers . . . . .	109 49
Essex . . . . .	581 53
Gloucester . . . . .	2,898 23
Groveland . . . . .	1,954 77
Hamilton . . . . .	478 09
Haverhill . . . . .	6,555 52
Ipswich . . . . .	3,330 98
Lawrence . . . . .	762 76
Lynn . . . . .	1,147 19
Merrimac . . . . .	2,445 82
Methuen . . . . .	2,825 60
Middleton . . . . .	48 37
Newbury . . . . .	3,130 91
Newburyport . . . . .	1,541 60
North Andover . . . . .	3,606 33
Rockport . . . . .	1,365 55
Rowley . . . . .	1,569 99
Salem . . . . .	607 83
Salisbury . . . . .	1,720 71
Saugus . . . . .	2,023 62
Swampscott . . . . .	454 86
Wenham . . . . .	695 12
West Newbury . . . . .	1,963 47

*Franklin County.*

Ashfield . . . . .	78 79
Bernardston . . . . .	734 10
Buckland . . . . .	716 81
Charlemont . . . . .	4,818 30
Colrain . . . . .	221 85
Conway . . . . .	783 16
Deerfield . . . . .	1,632 39
Erving . . . . .	1,186 32

Greenfield . . . . .	\$171 10
Montague . . . . .	872 81
Northfield . . . . .	1,661 83
Orange . . . . .	1,119 74
Shelburne . . . . .	1,453 11
Sunderland . . . . .	228 42
Whately . . . . .	446 27

*Hampden County.*

Agawam . . . . .	1,711 72
Blandford . . . . .	629 63
Brimfield . . . . .	337 67
Chester . . . . .	651 00
Chicopee . . . . .	2,081 73
East Longmeadow . . . . .	706 20
Holyoke . . . . .	683 10
Monson . . . . .	149 10
Palmer . . . . .	3,435 60
Russell . . . . .	2,320 38
Wales . . . . .	133 66
West Springfield . . . . .	74 90
Westfield . . . . .	2,365 03
Wilbraham . . . . .	730 04

*Hampshire County.*

Amherst . . . . .	1,051 31
Belchertown . . . . .	649 47
Easthampton . . . . .	271 07
Goshen . . . . .	208 12
Granby . . . . .	1,274 39
Hadley . . . . .	1,209 13
Hatfield . . . . .	49 85
Huntington . . . . .	1,503 70
Northampton . . . . .	500 93
South Hadley . . . . .	2,253 99
Southampton . . . . .	204 05
Ware . . . . .	1,062 01
Williamsburg . . . . .	832 16

*Middlesex County.*

Acton . . . . .	2,539 67
Arlington . . . . .	197 12
Ashby . . . . .	1,275 59
Ashland . . . . .	1,101 91
Ayer . . . . .	534 13
Bedford . . . . .	1,036 84

Billerica . . . . .	\$1,150 97
Boxborough . . . . .	1,109 28
Burlington . . . . .	1,639 66
Chelmsford . . . . .	5,686 01
Concord . . . . .	613 74
Dracut . . . . .	1,438 25
Framingham . . . . .	2,583 20
Groton . . . . .	210 49
Holliston . . . . .	846 83
Hudson . . . . .	714 09
Lexington . . . . .	1,158 58
Lincoln . . . . .	168 14
Littleton . . . . .	2,569 70
Lowell . . . . .	2,575 96
Malden . . . . .	144 37
Marlborough . . . . .	2,324 60
Medford . . . . .	60 56
Melrose . . . . .	1,155 33
Natick . . . . .	766 15
Newton . . . . .	284 50
North Reading . . . . .	1,060 44
Pepperell . . . . .	925 18
Reading . . . . .	992 51
Shirley . . . . .	306 84
Somerville . . . . .	280 10
Stoneham . . . . .	1,604 54
Sudbury . . . . .	295 19
Tewksbury . . . . .	172 61
Townsend . . . . .	1,740 53
Tyngsborough . . . . .	4,427 80
Watertown . . . . .	698 41
Wayland . . . . .	355 52
Westford . . . . .	2,164 85
Weston . . . . .	736 40
Wilmington . . . . .	749 14
Winchester . . . . .	1,470 74
Woburn . . . . .	2,889 58

*Nantucket County.*

Nantucket . . . . .	4,130 91
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*Norfolk County.*

Avon . . . . .	114 42
Bellingham . . . . .	995 28
Braintree . . . . .	1,001 14
Canton . . . . .	1,690 36
Cohasset . . . . .	322 64



Dedham . . . . .	\$908 54
Dover . . . . .	965 68
Foxborough . . . . .	760 57
Franklin . . . . .	1,360 46
Holbrook . . . . .	422 08
Milton . . . . .	269 98
Needham . . . . .	743 39
Norfolk . . . . .	485 74
Norwood . . . . .	1,384 83
Plainville . . . . .	2,513 62
Quincy . . . . .	569 98
Randolph . . . . .	451 29
Stoughton . . . . .	1,479 17
Walpole . . . . .	1,933 71
Wellesley . . . . .	353 47
Westwood . . . . .	92 20
Weymouth . . . . .	2,455 09
Wrentham . . . . .	2,121 58

*Plymouth County.*

Abington . . . . .	892 42
Bridgewater . . . . .	869 73
Brockton . . . . .	424 20
Duxbury . . . . .	854 81
East Bridgewater . . . . .	200 99
Hanover . . . . .	571 91
Hingham . . . . .	727 21
Kingston . . . . .	157 18
Lakeville . . . . .	2,429 01
Marion . . . . .	975 63
Marshfield . . . . .	443 49
Mattapoisett . . . . .	224 46
Middleborough . . . . .	952 86
Pembroke . . . . .	627 74
Plymouth . . . . .	600 41
Rochester . . . . .	945 56
Rockland . . . . .	1,007 93
Scituate . . . . .	564 87
Wareham . . . . .	2,008 61
West Bridgewater . . . . .	460 01
Whitman . . . . .	499 15

*Suffolk County.*

Boston . . . . .	740 62
Chelsea . . . . .	674 00
Revere . . . . .	2,030 91

*Worcester County.*

Ashburnham . . . . .	\$3,252 37
Athol . . . . .	1,960 35
Auburn . . . . .	2,162 46
Barre . . . . .	1,706 81
Blackstone . . . . .	2,157 39
Brookfield . . . . .	1,098 65
Charlton . . . . .	2,293 12
Douglas . . . . .	394 00
Dudley . . . . .	1,684 39
Fitchburg . . . . .	464 92
Gardner . . . . .	726 31
Grafton . . . . .	3,285 28
Hardwick . . . . .	233 07
Harvard . . . . .	828 90
Holden . . . . .	2,840 95
Hopedale . . . . .	236 42
Lancaster . . . . .	915 25
Leicester . . . . .	2,378 81
Leominster . . . . .	1,412 25
Lunenburg . . . . .	1,402 62
Mendon . . . . .	316 58
Milford . . . . .	715 30
Millbury . . . . .	1,092 24
Millville . . . . .	1,598 96
New Braintree . . . . .	9 48
North Brookfield . . . . .	128 19
Northborough . . . . .	596 36
Northbridge . . . . .	168 90
Oakham . . . . .	558 09
Oxford . . . . .	1,140 05
Paxton . . . . .	323 39
Petersham . . . . .	1,402 64
Phillipston . . . . .	523 43
Princeton . . . . .	9 69
Rutland . . . . .	1,953 76
Shrewsbury . . . . .	1,552 28
Southborough . . . . .	945 66
Southbridge . . . . .	124 86
Spencer . . . . .	442 75
Sterling . . . . .	2,521 96
Sturbridge . . . . .	471 97
Sutton . . . . .	1,130 45
Templeton . . . . .	1,331 96
Upton . . . . .	1,380 51

Uxbridge . . . . .	\$2,765 77
Warren . . . . .	395 10
Webster . . . . .	817 71
West Boylston . . . . .	512 44
West Brookfield . . . . .	672 36
Westborough . . . . .	869 27
Westminster . . . . .	2,555 34
Winchendon . . . . .	3,474 63
Worcester . . . . .	1,281 07
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Total . . . . .	\$358,889 44

The amounts expended for maintenance of State highways, the average expenditure per mile in 1920 for maintenance, the average cost per mile per year for each municipality, the number of miles under maintenance, and the amounts to be assessed upon municipalities for maintenance under 1920 expenditures, by authority of chapter 344, Part 1, General Acts of 1917, are shown in the following table: —

## DEPARTMENT OF PUBLIC WORKS.

TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Totals to 1920.	During 1920.	Total.	Totals to 1920.	During 1920.	Total.
Abington . . . . .	\$8,868 14	\$892 42	\$9,760 56	\$32,522 22	\$1,921 96	\$34,444 18
Acton . . . . .	21,384 64	2,539 67	23,924 31	103,059 12	106,197 29	209,256 41
Acushnet . . . . .	12,673 89	998 04	13,671 93	38,483 27	2,168 98	40,652 25
Adams . . . . .	8,280 57	311 41	8,591 98	6,019 36	1,326 75	7,346 11
Agawam . . . . .	17,759 56	1,711 72	19,471 28	19,549 97	340 64	19,890 61
Amesbury . . . . .	10,329 71	4,205 10	14,534 81	6,538 93	2,232 75	8,771 68
Amherst . . . . .	6,743 91	1,051 31	7,795 22	9,755 30	2,901 91	12,657 21
Andover . . . . .	26,038 87	2,084 80	28,123 67	88,000 57	3,396 95	91,397 52
Arlington . . . . .	340 80	197 12	537 92	207 34	401 41	608 75
Ashburnham . . . . .	13,376 17	3,252 37	16,628 54	24,369 89	20,171 02	44,540 91
Ashby . . . . .	15,266 78	1,275 59	16,542 37	43,323 70	7,899 66	51,223 36
Ashfield . . . . .	4,816 56	78 79	4,895 35	7,185 70	1,698 88	8,884 58
Ashland . . . . .	6,720 66	1,101 91	7,822 57	5,692 04	835 61	6,527 65
Athol . . . . .	15,714 41	1,960 35	17,674 76	43,436 44	1,813 85	45,250 29
Attleboro . . . . .	13,790 53	1,462 00	15,252 53	44,362 59	42,253 50	86,616 09
Auburn . . . . .	42,520 36	2,162 46	44,682 82	71,205 21	2,928 57	74,133 78
Avon . . . . .	602 17	114 42	716 59	1,972 74	357 31	2,330 05
Ayer . . . . .	2,904 55	534 13	3,438 68	4,261 83	566 11	4,827 94
Barnstable . . . . .	27,977 35	3,704 87	31,682 22	36,491 32	5,820 51	42,311 83
Barre . . . . .	16,011 70	1,706 81	17,718 51	23,960 48	5,555 09	29,515 57
Becket . . . . .	40,121 92	1,664 86	41,786 78	196,074 01	46,734 80	242,808 81
Bedford . . . . .	4,992 89	1,036 84	6,029 73	7,868 95	149 23	8,018 18
Belchertown . . . . .	5,118 06	649 47	5,767 53	5,131 32	1,664 09	6,795 41
Bellingham . . . . .	5,325 05	995 28	6,320 33	7,789 96	892 80	8,682 76
Berkley . . . . .	2,343 61	427 81	2,771 42	1,722 55	880 56	2,603 11
Bernardston . . . . .	9,147 25	734 10	9,881 35	13,207 85	36,970 57	50,178 42
Beverly . . . . .	56,668 95	2,387 30	59,056 25	159,315 45	2,003 88	161,319 33
Billerica . . . . .	3,847 80	1,150 97	4,998 77	4,615 35	1,145 27	5,760 62
Blackstone . . . . .	12,335 50	2,157 39	14,492 89	11,682 49	1,888 21	13,570 70
Blandford . . . . .	1,449 43	629 63	2,079 06	7,212 38	2,650 77	9,863 15
Boston . . . . .	12,161 19	740 62	12,901 81	73,852 72	1,403 43	75,256 15
Bourne . . . . .	16,758 70	2,171 39	18,930 09	46,879 99	1,918 45	48,798 44
Boxborough . . . . .	8,745 06	1,109 28	9,854 34	10,262 77	1,809 76	12,072 53
Braintree . . . . .	4,070 17	1,001 14	5,071 31	13,030 12	1,196 15	14,226 27
Brewster . . . . .	17,676 64	1,319 08	18,995 72	42,813 61	1,410 57	44,224 18
Bridgewater . . . . .	8,580 52	869 73	9,450 25	28,175 54	3,753 16	31,928 70
Brimfield . . . . .	7,166 05	337 67	7,503 72	15,264 39	2,384 57	17,648 96
Brockton . . . . .	16,485 53	424 20	16,909 73	30,833 35	548 08	31,381 43
Brookfield . . . . .	19,907 27	1,098 65	21,005 92	42,881 86	2,223 03	45,104 89
Buckland . . . . .	18,149 66	716 81	18,866 47	43,776 17	3,466 23	47,242 40
Burlington . . . . .	12,620 33	1,639 66	14,259 99	10,863 43	3,121 95	13,985 38
Canton . . . . .	13,784 49	1,690 36	15,474 85	54,076 87	2,733 82	56,810 69
Charlemont . . . . .	15,885 77	4,818 30	20,704 07	26,078 68	13,015 37	39,094 05
Charlton . . . . .	21,350 68	2,293 12	23,643 80	25,339 68	4,995 43	30,335 11
Chatham . . . . .	13,518 42	2,178 42	15,696 84	33,277 97	2,194 01	35,471 98
Chelmsford . . . . .	20,948 12	5,686 01	26,634 13	25,265 55	8,838 21	34,103 76
Chelsea . . . . .	8,950 06	674 00	9,624 06	20,160 08	274 99	20,435 07
Cheshire . . . . .	17,389 03	1,222 21	18,611 24	15,165 07	5,525 57	20,692 64
Chester . . . . .	20,691 56	651 00	21,342 56	28,842 15	3,841 35	32,683 50
Chicopee . . . . .	28,272 10	2,081 73	30,353 83	51,614 76	2,535 23	54,149 99
Chilmark . . . . .	9,160 31	1,187 55	10,347 86	16,473 27	3,925 90	20,399 17
Clarksburg . . . . .	6,309 10	569 84	6,878 94	6,804 59	2,824 93	9,629 52
Cohasset . . . . .	8,401 44	322 64	8,724 08	43,188 43	3,338 04	46,526 47
Colrain . . . . .	4,779 57	221 85	5,001 42	3,908 16	2,602 70	6,510 86
Concord . . . . .	22,538 50	613 74	23,152 24	115,412 54	1,178 29	116,590 83
Conway . . . . .	881 02	783 16	1,664 18	1,364 84	2,985 88	4,350 72
Cummington . . . . .	-	-	-	-	466 23	466 23
Dalton . . . . .	12,005 72	720 41	12,726 13	10,043 50	1,899 08	11,942 58
Danvers . . . . .	290 42	109 49	399 91	168 58	154 48	323 06
Dartmouth . . . . .	16,430 20	2,903 09	19,333 29	91,479 53	4,100 56	95,580 09
Dedham . . . . .	3,052 88	908 54	3,961 42	5,525 73	1,466 46	6,992 19
Deerfield . . . . .	32,899 66	1,632 39	34,532 05	69,085 71	5,540 37	74,626 08
Dennis . . . . .	25,931 55	1,694 68	27,626 23	39,068 53	1,373 30	40,441 83
Dighton . . . . .	7,314 49	1,134 90	8,449 39	47,216 27	2,118 90	49,335 17
Douglas . . . . .	6,430 35	394 00	6,824 35	11,381 25	1,466 27	12,847 52
Dover . . . . .	7,504 75	965 68	8,470 43	6,002 21	950 66	6,952 87
Dracont . . . . .	6,365 12	1,438 25	7,803 37	7,835 95	3,011 75	10,847 70
Dudley . . . . .	10,181 04	1,684 39	11,865 43	14,633 70	2,328 51	16,962 21
Duxbury . . . . .	13,100 15	854 81	13,954 96	50,448 17	1,414 38	51,862 55
East Bridgewater . . . . .	579 18	200 99	780 17	22,161 42	5,113 39	27,274 81
East Longmeadow . . . . .	6,573 50	706 20	7,279 70	8,100 55	1,105 83	9,206 38

Total expended.	AVERAGE EXPENDITURE PER MILE IN 1920.			Average Cost per Mile per Year.	Length under Main- tenance (Miles).	Amount to be assessed on Cities and Towns under 1920 Ex- penditures.
	From Revenue Appro- priation.	From Motor Vehicle Fees Fund.	Total.			
\$44,204 74	\$150 21	\$323 51	\$473 72	\$600 20	5.941	\$1,188 20
233,180 72	322 82	13,499 08	13,821 90	1,985 80	7.867	1,573 40
54,324 18	216 87	471 31	688 18	791 07	4.602	460 20
15,938 09	153 56	654 22	807 78	517 40	2.028	819 08
39,361 89	428 68	85 31	513 99	756 31	3.993	798 60
23,306 49	1,276 21	677 62	1,953 83	443 74	3.295	3,218 92
20,452 43	148 97	411 21	560 18	567 67	7.057	1,976 61
119,521 19	478 49	779 65	1,258 14	1,366 88	4.357	2,740 88
1,146 67	151 98	309 49	461 47	884 09	1.297	299 26
61,169 45	529 01	3,280 91	3,809 92	2,484 14	6.148	614 80
67,765 73	184 33	1,141 57	1,325 90	689 38	6.920	346 00
13,779 93	49 00	1,056 52	1,105 52	387 48	1.608	160 80
14,350 22	344 67	261 37	606 04	344 62	3.197	319 70
62,925 05	351 32	325 06	676 38	982 50	5.580	1,887 10
101,868 62	431 40	12,467 84	12,899 24	1,744 89	3.389	5,840 60
118,816 60	408 09	552 66	960 75	1,111 61	5.299	1,059 80
3,046 64	69 90	218 27	288 17	422 91	1.637	163 70
8,266 62	153 57	162 77	316 34	518 50	3.478	550 12
73,994 05	186 77	293 42	480 19	408 63	19.837	4,762 60
47,234 08	281 61	916 53	1,198 14	752 62	6.061	1,212 20
284,595 59	93 96	2,637 70	2,731 66	2,298 31	17.718	885 80
14,047 91	629 53	90 60	720 13	472 17	1.647	329 40
12,562 94	201 20	515 51	716 71	286 47	3.228	322 80
15,003 09	312 98	280 75	593 73	315 06	3.180	318 00
5,374 53	340 07	699 97	1,040 04	379 45	1.258	62 90
60,059 77	33 64	4,212 21	4,295 85	1,287 32	8.777	438 85
220,375 58	420 30	320 80	773 10	2,143 46	5.680	2,195 59
10,759 39	214 89	213 83	428 72	595 56	5.356	1,148 12
28,063 59	1,041 21	911 30	1,952 51	949 35	2.072	414 40
11,942 21	152 34	641 37	793 71	1,083 58	4.133	206 65
88,157 96	530 53	1,005 32	1,535 85	5,554 65	1.396	1,072 02
67,728 53	168 80	149 13	317 93	491 11	12.864	2,044 92
21,926 87	335 03	546 59	881 62	386 04	3.311	165 55
19,297 58	167 75	200 43	368 18	657 18	5.968	1,098 64
63,219 90	168 66	180 36	349 02	390 79	7.821	391 05
41,378 95	191 49	826 32	1,017 81	746 00	4.542	2,311 45
25,152 68	85 12	601 10	686 22	313 07	3.967	198 35
48,291 16	111 93	144 61	256 54	710 37	3.790	486 14
66,110 81	618 96	1,252 41	1,871 37	904 12	1.775	177 50
66,108 87	166 70	806 10	972 80	741 33	4.300	860 00
28,245 37	431 60	821 71	1,253 31	476 43	3.799	379 50
72,285 54	523 01	845 86	1,368 87	1,658 76	3.232	2,212 09
59,798 12	404 15	1,091 71	1,495 86	970 02	11.922	596 10
59,978 91	221 00	481 44	702 44	504 32	10.376	1,637 60
51,168 82	303 99	306 17	610 16	473 77	7.166	1,433 20
60,737 89	791 04	1,229 58	2,020 62	664 09	7.188	5,224 97
30,059 13	702 81	286 75	989 56	1,199 58	.959	474 50
39,303 88	183 24	828 72	1,011 96	482 20	6.670	333 50
54,026 06	98 40	580 62	679 02	599 30	6.616	661 60
84,503 82	526 49	641 18	1,167 67	1,343 16	3.954	2,308 45
30,747 03	152 47	504 03	656 50	363 28	7.789	389 45
16,508 46	198 14	982 24	1,180 38	845 59	2.876	143 80
55,250 55	141 45	1,463 41	1,604 86	1,204 47	2.281	1,830 34
11,512 28	104 01	1,220 21	1,324 22	278 34	2.133	213 30
139,743 07	146 48	281 21	427 69	1,990 01	4.190	896 02
6,014 90	254 77	971 33	1,226 10	903 13	3.074	153 70
466 23	-	326 03	326 03	977 42	1.430	71 50
24,668 71	250 92	661 47	912 39	453 97	2.871	574 20
722 97	37 35	52 71	90 06	327 13	2.931	131 99
114,913 38	625 40	883 36	1,508 76	1,378 10	4.642	3,501 83
10,953 61	385 79	622 70	1,008 49	395 40	2.355	1,187 50
109,158 13	134 15	455 32	589 47	832 29	12.168	2,433 60
68,068 06	226 02	183 16	409 18	437 79	7.498	749 80
57,784 56	186 17	347 59	533 76	829 34	6.096	1,219 20
19,671 87	185 41	690 01	875 42	570 39	2.125	425 00
15,423 30	442 77	435 88	878 65	531 51	2.181	436 20
18,651 07	252 19	528 10	780 29	383 30	5.703	1,140 60
28,827 64	528 69	730 86	1,259 55	772 40	3.186	637 20
65,817 51	95 86	158 62	254 48	594 16	8.917	1,134 59
28,054 98	53 37	1,357 78	1,411 15	3,989 61	3.766	753 20
16,486 08	392 55	614 69	1,007 24	687 20	1.799	179 90



TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Totals to 1920.	During 1920.	Total.	Totals to 1920.	During 1920.	Total.
Eastham . . . . .	\$10,561 22	\$1,312 10	\$11,873 32	\$18,837 67	\$112,317 17	\$131,154 84
Easthampton . . . . .	8,205 81	271 07	8,476 88	26,555 67	827 65	27,383 32
Easton . . . . .	4,971 90	184 11	5,156 01	22,221 55	110 48	22,332 03
Edgartown . . . . .	6,498 76	922 10	7,420 86	1,915 99	1,543 46	3,459 45
Egremont . . . . .	1,221 57	1,383 66	2,605 23	10,153 73	1,075 20	11,228 93
Erving . . . . .	17,484 36	1,186 32	18,670 68	52,599 21	4,041 49	56,640 70
Essex . . . . .	6,224 85	581 53	6,806 38	5,161 43	686 41	5,847 84
Fairhaven . . . . .	2,868 50	489 55	3,358 05	21,506 45	676 21	22,182 66
Fall River . . . . .	66 30	—	66 30	50 81	128 77	179 58
Falmouth . . . . .	37,928 06	3,709 63	41,637 69	85,193 32	3,390 70	88,584 02
Fitchburg . . . . .	15,821 83	464 92	16,286 75	85,695 74	807 93	86,503 67
Florida . . . . .	17,362 15	7,223 95	24,586 10	34,484 76	15,084 53	49,569 29
Foxborough . . . . .	7,434 47	760 57	8,195 04	24,863 59	1,357 54	26,221 13
Framingham . . . . .	13,563 26	2,583 20	16,146 46	12,025 09	1,771 18	13,796 27
Franklin . . . . .	8,900 89	1,360 46	10,261 35	9,633 34	954 80	10,588 14
Freetown . . . . .	8,227 57	272 22	8,499 79	49,385 77	779 06	50,164 83
Gardner . . . . .	10,132 47	726 31	10,858 78	43,310 86	2,322 82	45,633 68
Gay Head . . . . .	3,420 04	723 75	4,143 79	2,768 50	4,143 91	6,912 41
Gill . . . . .	71 50	—	71 50	1 12	108 29	109 41
Gloucester . . . . .	53,213 81	2,898 23	56,117 04	41,490 39	1,671 99	43,162 38
Goshen . . . . .	9,222 49	208 12	9,430 61	18,557 65	1,226 07	19,783 72
Grafton . . . . .	17,948 88	3,285 28	21,234 16	20,173 36	3,883 00	24,056 36
Granby . . . . .	14,115 84	1,274 39	15,390 23	11,495 33	3,952 22	15,447 95
Great Barrington . . . . .	18,693 62	2,296 99	20,990 61	41,262 97	1,811 41	43,074 38
Greenfield . . . . .	9,013 83	171 10	9,184 93	38,619 65	33,320 04	71,939 69
Groton . . . . .	3,657 03	210 49	3,867 52	5,533 38	250 66	5,784 04
Groveland . . . . .	6,232 27	1,954 77	8,187 04	7,219 95	2,098 53	9,318 48
Hadley . . . . .	20,629 45	1,209 13	21,838 58	47,874 57	2,152 74	50,027 31
Hamilton . . . . .	13,803 60	478 09	14,281 69	55,263 81	2,898 23	58,162 04
Hancock . . . . .	48,866 36	179 54	49,045 90	107,023 32	66,301 02	173,324 34
Hanover . . . . .	4,394 56	571 91	4,966 47	12,853 18	1,205 75	14,058 93
Hardwick . . . . .	3,213 40	233 07	3,446 47	2,708 80	913 06	3,621 86
Harvard . . . . .	5,242 95	828 90	6,071 85	6,950 46	1,353 95	8,304 41
Harwich . . . . .	13,736 98	1,055 36	14,792 34	39,046 23	755 41	39,801 64
Hatfield . . . . .	8,134 01	49 85	8,183 86	70,079 24	266 52	70,345 76
Haverhill . . . . .	27,418 76	6,555 52	33,974 28	15,694 46	6,385 67	22,080 13
Hingham . . . . .	9,897 66	727 21	10,624 87	47,564 05	2,930 39	50,494 44
Hinsdale . . . . .	2,295 80	429 18	2,724 98	2,381 67	1,262 02	3,643 69
Holbrook . . . . .	4,364 40	422 08	4,786 48	6,608 22	1,062 52	7,670 74
Holden . . . . .	22,564 68	2,840 95	25,405 63	24,852 75	2,864 15	27,716 90
Holliston . . . . .	7,638 75	846 83	8,485 58	8,290 53	1,586 21	9,876 74
Holyoke . . . . .	9,017 15	683 10	9,700 25	44,745 16	1,201 26	45,946 42
Hopedale . . . . .	55 48	236 42	291 90	378 71	203 51	582 22
Hudson . . . . .	3,389 63	714 09	4,103 72	2,801 95	435 66	3,237 61
Huntington . . . . .	15,479 70	1,503 70	16,983 40	13,980 82	3,325 64	17,306 46
Ipswich . . . . .	19,000 99	3,330 98	22,331 97	74,271 58	1,679 58	75,951 16
Kingston . . . . .	2,752 17	157 18	2,909 35	5,720 86	548 94	6,269 80
Lakeville . . . . .	8,978 10	2,429 01	11,407 11	48,641 10	5,361 79	54,002 89
Lancaster . . . . .	4,936 00	915 25	5,851 25	4,444 08	1,052 03	5,496 11
Lanesborough . . . . .	5,400 27	365 74	5,766 01	4,780 77	1,177 81	5,958 58
Lawrence . . . . .	6,312 53	762 76	7,075 29	21,081 10	1,111 85	22,192 95
Lee . . . . .	36,427 30	2,800 98	39,228 28	29,618 32	3,508 50	33,126 82
Leicester . . . . .	45,836 09	2,378 81	48,214 90	68,639 65	38,817 24	107,456 89
Lenox . . . . .	55,417 03	1,688 63	57,105 66	57,105 66	4,263 51	61,369 17
Leominster . . . . .	8,857 76	1,412 25	10,270 01	6,979 88	1,811 10	8,790 98
Lexington . . . . .	24,774 57	1,158 58	25,933 15	112,858 41	1,543 66	114,402 07
Lincoln . . . . .	11,820 27	168 14	11,988 41	68,217 58	865 60	69,183 18
Littleton . . . . .	14,072 18	2,569 70	16,641 88	54,600 33	29,604 32	84,204 65
Lowell (east) . . . . .	—	—	—	379 07	—	379 07
Lowell (south) . . . . .	26,319 43	2,575 96	28,895 39	19,031 95	2,734 53	21,766 48
Lowell (north) . . . . .	—	—	—	3,018 16	—	3,018 16
Lunenburg . . . . .	21,289 26	1,402 62	22,691 88	54,166 56	86,578 10	140,744 66
Lynn . . . . .	14,569 52	1,147 19	15,716 71	13,364 54	1,699 99	15,064 53
Malden . . . . .	94 75	144 37	239 12	475 36	12 30	487 66
Mansfield . . . . .	2,604 37	159 41	2,763 78	10,156 96	1,410 73	11,567 69
Marion . . . . .	18,136 62	975 63	19,112 25	62,483 16	1,856 53	64,339 69
Marlborough . . . . .	39,981 99	2,324 60	42,306 59	165,084 90	3,427 44	168,512 34
Marshfield . . . . .	16,395 24	443 49	16,838 73	85,805 30	10,471 02	96,276 32
Mashpee . . . . .	2,417 16	591 36	3,008 52	4,337 33	589 02	4,926 35
Medford . . . . .	9,922 24	224 46	10,146 70	63,100 32	5,811 37	68,911 69
Medford . . . . .	3,368 96	60 56	3,429 52	19,743 57	309 67	20,053 24
Melrose . . . . .	1,857 67	1,155 33	3,013 00	2,065 55	354 04	2,419 59



Total expended.	AVERAGE EXPENDITURE PER MILE IN 1920.			Average Cost per Mile per Year.	Length under Maintenance (Miles).	Amount to be assessed on Cities and Towns under 1920 Ex- penditures.
	From Revenue Appropriation.	From Motor Vehicle Fees Fund.	Total.			
\$143,028 16	\$203 11	\$17,386 56	\$17,589 67	\$1,834 21	6.460	\$323 00
35,860 20	99 00	302 28	401 28	639 40	2.738	549 36
27,488 04	229 85	137 93	367 78	1,721 23	.801	147 30
10,880 31	375 14	627 93	1,003 07	194 97	2.458	245 80
13,834 16	253 32	196 85	450 17	1,037 58	5.462	273 10
75,311 38	146 04	497 54	643 58	792 23	8.123	812 30
12,654 22	399 13	471 11	870 24	902 06	1.457	145 70
25,540 71	131 35	181 44	312 79	588 15	3.727	582 88
245 88	-	4,024 06	4,024 06	1,287 33	.032	64 00
130,221 71	238 91	218 37	457 28	504 45	15.527	3,550 16
102,790 42	112 93	196 24	309 17	1,242 21	4.117	636 42
74,155 39	1,004 44	2,097 40	3,101 84	1,687 92	7.192	719 20
34,416 17	216 44	386 32	602 76	615 43	3.514	702 80
29,942 73	805 74	552 46	1,358 20	682 56	3.206	2,177 19
20,849 49	361 54	253 73	615 27	521 14	3.763	1,157 63
58,664 62	70 36	201 35	271 71	926 81	3.869	386 90
56,492 46	216 42	692 14	908 56	785 10	3.356	1,524 56
11,056 20	230 93	1,322 24	1,553 17	600 88	3.134	156 70
180 91	-	381 30	381 30	86 60	.284	14 20
99,279 42	429 62	247 85	677 47	1,104 56	6.746	2,285 11
29,214 33	84 67	498 81	583 48	540 54	2.458	122 90
45,290 52	343 00	405 41	748 41	586 36	9.578	1,915 60
30,838 18	165 81	514 21	680 02	386 35	7.686	384 30
64,064 99	263 96	208 16	472 12	746 35	8.702	2,054 20
81,124 62	31 38	6,112 65	6,144 03	1,070 77	5.451	4,979 07
9,651 56	138 94	165 45	304 39	375 36	1.515	230 57
17,505 52	1,134 52	1,217 95	2,352 47	578 48	1.723	172 30
71,865 89	257 70	458 81	716 51	783 22	4.692	938 40
72,443 73	154 17	934 61	1,088 78	1,638 77	3.101	620 20
222,370 24	55 52	20,501 24	20,556 76	3,067 20	3.234	161 70
19,025 40	100 39	211 65	312 04	579 33	5.697	888 83
7,068 33	284 58	1,114 85	1,399 43	414 30	.819	163 80
14,376 26	357 90	584 61	942 51	423 70	2.316	463 20
54,593 98	162 94	116 63	279 57	480 15	6.477	647 70
78,529 62	14 08	75 29	89 37	1,988 29	3.540	158 19
56,054 41	1,146 87	1,117 15	2,264 02	629 78	5.716	6,470 59
61,119 31	185 75	748 50	934 25	910 76	3.915	1,828 80
6,368 67	121 75	358 02	479 77	307 08	3.525	176 25
12,457 22	164 75	414 72	579 47	304 36	2.562	512 40
53,122 53	408 89	412 23	821 12	469 82	6.948	1,389 60
18,362 32	171 98	322 14	494 12	194 73	4.924	984 80
55,646 67	163 93	288 28	452 21	1,286 24	4.167	942 18
874 12	748 16	643 02	1,391 18	1,106 48	.316	219 97
7,341 33	625 30	381 49	1,006 79	469 00	1.142	574 88
34,289 86	187 70	415 13	602 83	616 75	8.011	400 55
98,283 13	753 27	379 82	1,133 09	1,997 95	4.422	2,505 28
9,179 15	61 88	216 11	277 99	353 28	2.540	254 00
65,410 00	290 59	641 44	932 03	613 37	8.359	835 90
11,347 36	732 78	842 30	1,575 08	499 77	1.249	249 80
11,724 59	111 51	359 09	470 60	560 18	3.280	164 00
29,268 24	942 84	1,374 36	2,317 20	3,220 18	.809	937 31
72,355 10	261 65	327 74	589 39	555 57	10.705	2,141 00
155,671 79	490 88	8,010 16	8,501 04	1,405 66	4.846	969 20
114,640 10	220 36	556 38	776 74	954 77	7.663	2,976 07
19,060 99	554 04	710 51	1,264 55	457 50	2.549	1,611 68
140,335 22	231 39	308 30	539 69	1,438 09	5.007	1,351 12
81,171 59	81 58	419 99	498 57	1,649 79	2.061	206 10
100,846 53	414 53	4,775 66	5,190 19	1,602 21	6.199	619 90
379 07	-	-	-	-	-	-
50,661 87	970 60	1,030 34	2,000 94	973 11	2.654	2,655 25
3,018 16	-	-	-	-	-	-
163,436 54	238 30	14,709 15	14,947 45	2,083 10	5.886	588 60
30,781 24	313 27	464 22	777 49	1,087 17	3.662	1,423 59
726 78	956 09	81 46	1,037 55	1,991 17	.151	78 34
14,331 47	131 42	1,163 01	1,294 43	719 43	1.213	785 07
83,451 94	147 58	280 82	428 40	693 28	6.611	1,322 20
210,818 93	332 85	490 76	823 61	1,824 10	6.984	2,876 02
113,115 05	53 57	1,264 77	1,318 34	900 38	8.279	1,655 80
7,934 87	75 70	75 40	151 10	166 30	7.812	390 60
79,058 39	70 01	1,812 65	1,882 66	1,168 88	3.206	320 60
23,482 76	70 26	359 24	429 50	2,197 93	.862	185 11
5,432 59	2,037 61	624 40	2,662 01	900 18	.567	754 68

## DEPARTMENT OF PUBLIC WORKS.

TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Totals to 1920.	During 1920.	Total.	Totals to 1920.	During 1920.	Total.
Mendon . . . . .	\$202 43	\$316 58	\$519 01	\$2,596 44	\$482 42	\$3,078 86
Merrimac . . . . .	7,752 91	2,445 82	10,198 73	5,980 69	2,432 69	8,413 38
Methuen . . . . .	12,342 44	2,825 60	15,168 04	78,008 42	5,638 26	83,646 68
Middleborough . . . . .	27,692 42	952 86	28,645 28	105,923 74	13,803 06	119,726 80
Middleton . . . . .	15,897 80	48 37	15,946 17	3,047 40	252 30	3,299 70
Millford . . . . .	6,531 62	715 30	7,246 92	10,159 75	1,216 00	11,375 75
Millbury . . . . .	19,290 06	1,092 24	20,382 30	52,848 59	1,608 86	54,457 45
Millville . . . . .	2,382 94	1,598 96	3,981 90	3,647 72	1,301 62	4,949 34
Milton . . . . .	8,047 27	269 98	8,317 25	14,270 93	576 58	14,847 51
Monson . . . . .	5,028 67	149 10	5,177 77	2,067 72	508 58	2,576 30
Montague . . . . .	12,883 23	872 81	13,756 04	44,282 29	3,082 03	47,364 32
Nantucket . . . . .	20,755 30	4,130 91	24,886 21	13,200 89	829 22	14,030 11
Natick . . . . .	15,223 34	766 15	15,989 49	80,364 12	1,379 34	81,743 46
Needham . . . . .	6,349 03	743 39	7,092 42	5,545 07	1,247 66	6,792 73
New Braintree . . . . .	537 38	9 48	546 86	311 31	134 11	445 42
Newbury . . . . .	19,120 37	3,130 91	22,251 28	16,859 74	2,116 63	18,976 37
Newburyport . . . . .	12,715 50	1,541 60	14,257 10	9,843 68	375 69	10,219 37
New Marlborough . . . . .	209 76	59 30	269 06	192 06	—	192 06
Newton . . . . .	3,990 07	284 50	4,274 57	18,082 77	351 30	18,432 07
Norfolk . . . . .	6,163 90	485 74	6,649 64	14,350 51	1,734 09	16,084 60
North Adams . . . . .	59,698 61	4,831 14	64,529 75	104,614 88	11,976 93	116,591 81
Northampton . . . . .	11,787 31	500 93	12,288 24	45,906 19	1,306 24	47,212 43
North Andover . . . . .	19,157 96	3,606 33	22,764 29	14,720 33	4,376 88	19,097 21
North Attleborough . . . . .	11,330 82	2,831 92	14,162 74	52,360 97	3,238 97	55,599 94
Northborough . . . . .	19,787 59	596 36	20,383 95	74,980 23	1,781 07	76,761 30
Northbridge . . . . .	1,073 19	168 90	1,242 09	2,253 86	753 09	3,006 95
North Brookfield . . . . .	4,204 23	128 19	4,332 42	4,307 44	793 70	5,101 14
Northfield . . . . .	6,728 63	1,661 83	8,390 46	19,644 23	6,214 22	25,858 45
North Reading . . . . .	20,682 51	1,060 44	21,742 95	66,266 15	1,502 14	67,768 29
Norton . . . . .	11,244 15	1,749 98	12,994 13	14,125 03	3,464 46	17,589 49
Norwood . . . . .	13,274 48	1,384 83	14,659 31	26,386 79	2,454 12	28,840 91
Oak Bluffs . . . . .	10,179 57	1,181 99	11,361 56	5,673 62	1,432 05	7,105 67
Oakham . . . . .	905 38	558 09	1,463 47	4,244 54	1,924 40	6,168 94
Orange . . . . .	20,418 81	1,119 74	21,538 55	62,785 64	1,693 63	64,479 27
Orleans . . . . .	9,692 04	1,053 75	10,745 79	16,633 25	1,333 11	17,966 36
Oxford . . . . .	7,560 29	1,140 05	8,700 34	8,113 66	2,124 68	10,238 34
Palmer . . . . .	45,962 31	3,435 60	49,397 91	139,891 99	6,764 02	146,656 01
Paxton . . . . .	26,523 36	323 39	26,846 75	21,888 90	4,071 69	25,960 59
Pembroke . . . . .	3,628 11	627 74	4,255 85	4,494 93	893 45	5,388 38
Pepperell . . . . .	3,718 68	925 18	4,643 86	8,199 62	1,849 50	10,049 12
Petersham . . . . .	248 40	1,402 64	1,651 04	3,265 81	3,483 65	6,749 46
Phillipston . . . . .	25,029 07	523 43	25,552 50	29,723 18	517 63	30,240 81
Pittsfield . . . . .	60,586 13	1,395 53	61,981 66	78,038 84	72,254 57	150,293 41
Plainville . . . . .	4,540 79	2,513 62	7,054 41	26,170 26	2,474 50	28,644 76
Plymouth . . . . .	20,299 89	660 41	20,960 30	79,761 02	1,113 17	80,874 19
Princeton . . . . .	4,592 61	9 69	4,602 30	6,737 52	1,126 66	7,864 18
Provincetown . . . . .	4,208 00	1,526 39	5,734 39	15,162 34	889 63	16,051 97
Quincy . . . . .	10,067 57	569 98	10,637 55	52,079 61	10,395 94	62,475 55
Randolph . . . . .	3,819 28	451 29	4,270 57	46,031 31	6,179 91	52,211 22
Raynham . . . . .	4,780 79	1,408 79	6,189 58	12,015 73	3,119 78	15,135 51
Reading . . . . .	40,362 36	992 51	41,354 87	54,466 38	2,265 40	56,731 78
Rehoboth . . . . .	15,546 08	1,677 76	17,223 84	59,972 46	3,495 16	63,467 62
Revere (east) . . . . .	17,155 85	2,030 91	19,186 76	1,166 67	1,950 72	1,166 67
Revere (west) . . . . .				36,317 12		38,267 84
Revere (north) . . . . .				3,526 10		3,526 10
Richmond . . . . .	8,790 37	783 50	9,573 87	26,588 44	5,326 01	31,914 45
Rochester . . . . .	10,749 25	945 56	11,694 81	30,325 36	2,160 43	32,485 79
Rockland . . . . .	7,453 97	1,007 93	8,461 90	13,448 87	1,430 69	14,879 56
Rockport . . . . .	9,370 76	1,365 55	10,736 31	4,116 92	543 06	4,659 98
Rowley . . . . .	12,634 78	1,569 99	14,204 77	98,832 12	1,589 12	100,421 24
Russell . . . . .	38,897 63	2,320 38	41,218 01	45,870 18	6,777 47	52,647 65
Rutland . . . . .	4,019 66	1,953 76	5,973 42	9,710 61	3,366 62	13,077 23
Salem . . . . .	19,907 32	607 83	20,515 15	12,189 87	809 97	12,999 84
Salisbury . . . . .	11,174 30	1,720 71	12,895 01	54,509 42	2,655 05	57,164 47
Sandwich . . . . .	12,539 77	1,749 10	14,288 87	28,523 17	3,414 11	31,937 28
Saugus . . . . .	17,433 65	2,023 62	19,457 27	70,226 45	1,037 55	71,264 00
Savoy . . . . .	4,123 88	511 38	4,635 26	7,264 09	2,583 19	9,847 28
Scituate . . . . .	13,664 49	564 87	14,229 36	47,640 11	1,305 21	48,945 32
Seekonk . . . . .	11,939 27	1,563 78	13,503 05	54,917 26	35,959 91	90,877 17
Sharon . . . . .	1,051 56	—	1,051 56	1,128 20	622 29	1,750 49
Sheffield . . . . .	7,370 13	1,592 85	8,962 98	13,321 93	2,120 12	15,442 05
Shelburne . . . . .	13,627 54	1,453 11	15,080 65	22,796 18	7,474 58	30,270 76

Total expended.	AVERAGE EXPENDITURE PER MILE IN 1920.			Average Cost per Mile per Year.	Length under Main- tenance (Miles).	Amount to be assessed on Cities and Towns under 1920 Ex- penditures.
	From Revenue Appro- priation.	From Motor Vehicle Fees Fund.	Total.			
\$3,597 87	\$341 14	\$519 85	\$860 99	\$553 86	.928	\$46 40
18,612 11	1,096 77	1,090 89	2,187 66	422 90	2.230	223 00
113,318 72	362 44	723 22	1,085 66	1,282 62	7.796	4,231 93
148,372 08	76 57	1,109 12	1,185 69	682 44	12.445	5,404 69
4,741 87	18 22	95 03	113 25	286 17	2.655	150 33
18,622 67	201 66	342 82	544 48	419 40	3.547	965 65
74,839 75	366 27	539 52	905 79	1,496 79	2.982	596 40
8,931 24	964 98	785 53	1,750 51	407 50	1.657	165 70
23,164 76	255 43	545 48	800 91	1,303 73	1.057	423 28
7,754 07	92 32	314 91	407 23	234 79	1.615	323 00
61,120 36	152 32	537 87	690 19	706 43	5.730	1,977 42
38,916 32	638 96	128 26	767 22	269 49	6.465	2,480 06
97,732 95	239 12	430 51	669 00	1,771 58	3.204	1,072 74
13,885 15	365 48	613 40	978 88	422 04	2.034	995 52
992 28	23 88	337 81	361 69	130 94	.397	19 85
41,227 65	739 99	500 26	1,240 25	550 80	4.231	846 20
24,476 47	694 41	169 23	863 64	609 74	2.220	958 64
461 12	257 82	-	257 82	1,002 43	.230	23 00
22,706 64	275 68	340 49	616 17	1,109 69	1.032	317 90
22,734 24	335 92	1,199 23	1,535 15	527 22	1.446	144 60
181,121 56	593 80	1,472 07	2,065 87	1,652 34	8.136	8,404 03
59,500 67	71 53	186 58	258 11	891 14	7.001	903 58
41,861 50	340 05	412 72	752 77	423 73	10.605	3,931 60
69,762 68	787 30	900 46	1,687 76	814 56	3.597	3,035 44
97,145 25	111 20	332 10	443 30	1,162 05	5.363	1,072 60
4,249 04	37 54	167 39	204 93	279 80	4.499	461 00
9,433 56	56 92	352 44	409 36	314 49	2.252	450 40
34,248 91	344 21	1,287 12	1,631 33	951 46	4.828	482 80
89,511 24	417 83	591 86	1,009 69	1,869 45	2.538	253 80
30,583 62	229 63	454 60	684 23	573 53	7.621	762 10
43,500 22	652 30	1,155 97	1,808 27	913 23	2.123	1,919 47
18,467 23	495 18	599 94	1,095 12	316 35	2.387	477 40
7,632 41	199 89	689 26	889 15	683 54	2.792	139 60
86,017 82	233 47	353 13	586 60	882 68	4.796	959 20
28,712 15	224 25	283 70	507 95	372 05	4.699	939 80
18,938 68	254 87	475 00	729 87	481 66	4.473	894 60
196,053 92	239 16	470 87	710 03	1,254 64	14.365	5,099 81
52,807 34	89 93	113 23	203 16	620 87	3.596	179 80
9,644 23	144 51	205 67	350 18	383 83	4.344	434 40
14,692 98	258 72	517 20	775 92	537 02	3.576	715 20
8,400 50	171 35	425 56	596 91	666 26	8.186	818 60
55,793 31	187 95	185 86	373 81	1,227 11	2.785	139 25
212,275 07	154 15	7,981 28	8,135 43	1,675 35	9.053	5,469 77
35,699 17	1,096 21	1,079 15	2,175 36	1,069 15	2.293	229 30
101,774 49	41 98	77 83	119 81	544 36	14.302	856 79
12,466 48	4 34	505 23	509 57	298 09	2.230	223 00
21,786 36	420 49	245 08	665 57	808 69	3.630	726 00
73,113 10	213 08	3,886 33	4,099 41	1,695 14	2.675	5,350 00
56,481 79	121 64	1,665 74	1,787 38	1,467 82	3.710	742 00
21,325 09	249 21	551 88	801 09	421 82	5.653	565 30
98,086 65	253 00	577 47	830 47	1,457 80	3.923	1,628 96
80,691 46	256 34	534 02	790 36	764 15	6.545	654 50
1,166 67						
57,454 60	404 48	388 51	792 99	2,462 55	5.021	1,990 82
3,526 10						
41,488 32	195 05	1,325 87	1,520 92	581 22	4.017	200 85
44,180 60	153 22	350 09	503 31	448 75	6.171	617 10
23,341 46	428 17	607 77	1,035 94	630 34	2.354	1,219 31
15,396 29	853 47	339 41	1,192 88	747 39	1.600	320 00
114,626 01	431 91	437 17	869 08	2,746 38	3.635	363 50
93,865 66	238 72	697 27	935 99	573 83	9.720	1,944 00
19,050 65	352 09	606 71	958 80	678 27	5.549	554 90
33,514 99	183 58	244 63	428 21	1,248 55	3.311	708 90
70,059 48	173 77	268 13	441 90	.845 47	9.902	990 20
46,226 15	183 71	358 59	542 30	467 19	9.521	952 10
90,721 27	603 16	309 25	912 41	2,171 77	3.355	1,530 59
14,482 54	282 53	1,427 18	1,709 71	1,318 99	1.810	90 50
63,174 68	105 13	242 92	348 05	730 76	5.373	935 04
104,380 22	259 38	5,964 49	6,223 87	1,373 38	6.029	1,205 80
2,802 05	-	975 38	975 38	362 63	.638	127 60
24,405 03	138 48	184 33	322 81	505 87	11.502	1,150 20
45,351 41	220 77	1,135 61	1,356 38	798 03	6.582	1,316 40



## DEPARTMENT OF PUBLIC WORKS.

TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Totals to 1920.	During 1920.	Total.	Totals to 1920.	During 1920.	Total.
Shirley . . . . .	\$2,196 60	\$306 84	\$2,503 44	\$2,696 92	\$244 03	\$2,940 95
Shrewsbury . . . . .	50,022 97	1,552 28	51,575 25	97,507 34	9,424 42	106,931 76
Somerset . . . . .	21,960 26	4,087 38	26,047 64	120,082 94	4,661 89	124,744 83
Somerville . . . . .	7,411 64	280 10	7,691 74	43,734 36	325 76	44,060 12
Southampton . . . . .	1,312 65	204 05	1,516 70	1,155 39	527 68	1,683 07
Southborough . . . . .	9,110 06	945 66	10,055 72	9,006 46	1,619 31	10,625 77
Southbridge . . . . .	4,265 67	124 86	4,390 53	7,852 25	216 78	8,069 03
South Hadley . . . . .	53,084 69	2,253 99	55,338 68	51,007 38	4,010 80	55,018 18
Spencer . . . . .	23,624 78	442 75	24,067 53	21,786 34	883 76	22,670 10
Sterling . . . . .	15,189 29	2,521 96	17,711 25	12,083 30	2,726 42	14,809 72
Stockbridge . . . . .	12,594 61	1,853 09	14,447 70	26,838 07	1,358 51	28,196 58
Stoneham . . . . .	11,871 15	1,604 54	13,475 69	29,019 31	31,950 30	60,969 61
Stoughton . . . . .	9,352 78	1,479 17	10,831 95	38,878 88	9,261 68	48,140 56
Sturbridge . . . . .	6,684 01	471 97	7,155 98	10,310 12	1,234 78	11,544 90
Sudbury . . . . .	35,619 09	295 19	35,914 28	156,066 98	1,907 75	157,974 73
Sunderland . . . . .	5,402 88	228 42	5,631 30	24,913 93	778 96	25,692 89
Sutton . . . . .	8,861 58	1,130 45	9,992 03	13,740 20	3,302 82	17,043 02
Swampscott . . . . .	22,810 68	454 86	23,265 54	21,183 64	532 00	21,715 64
Swansea . . . . .	15,582 55	7,815 23	23,397 78	62,686 68	13,705 96	76,392 64
Taunton . . . . .	19,497 80	1,554 89	21,052 69	67,488 90	3,144 86	70,633 76
Templeton . . . . .	14,793 69	1,331 96	16,125 65	42,862 67	5,567 62	48,430 29
Tewksbury . . . . .	18,317 73	172 61	18,490 34	155,147 45	4,259 99	159,407 44
Tisbury . . . . .	5,975 48	13 80	5,989 28	23,699 19	279 73	23,948 92
Townsend . . . . .	12,209 71	1,740 53	13,950 24	27,032 89	5,231 48	32,264 37
Truro . . . . .	11,410 04	2,182 54	13,592 58	12,710 72	36,337 79	49,048 51
Tyngsborough . . . . .	20,690 11	4,427 80	25,117 91	26,134 71	3,465 53	29,600 24
Upton . . . . .	590 25	1,380 51	1,970 76	407 18	1,639 84	2,047 02
Uxbridge . . . . .	9,008 19	2,765 77	11,773 96	13,644 16	2,429 53	16,073 69
Wales . . . . .	2,175 98	133 66	2,309 64	730 67	1,594 63	2,315 30
Walpole . . . . .	20,198 87	1,933 71	22,132 58	57,040 41	5,029 11	62,069 52
Ware . . . . .	12,223 35	1,062 01	13,285 36	8,709 39	3,998 04	12,707 43
Wareham . . . . .	24,458 49	2,008 61	26,467 10	88,832 19	5,636 64	94,468 83
Warren . . . . .	22,125 99	395 10	22,521 09	119,005 09	763 63	119,768 72
Washington . . . . .	-	-	-	-	159 25	159 25
Watertown . . . . .	8,348 96	698 41	9,047 37	11,642 92	542 79	12,185 71
Wayland . . . . .	42,586 33	355 52	42,941 85	38,988 81	1,962 69	40,951 50
Webster . . . . .	4,407 98	817 71	5,225 69	12,621 67	807 18	13,428 85
Wellesley . . . . .	5,857 18	353 47	6,210 65	18,337 97	117 98	18,455 95
Wellfleet . . . . .	11,640 61	1,886 19	13,526 80	10,615 77	58,959 16	69,574 93
Wenham . . . . .	13,349 88	695 12	14,045 00	20,217 18	34,452 57	54,669 75
Westborough . . . . .	6,667 43	869 27	7,536 70	6,808 25	2,433 65	9,241 90
West Boylston . . . . .	10,711 94	512 44	11,224 38	43,229 91	765 29	43,995 20
West Bridgewater . . . . .	22,278 34	460 01	22,738 35	8,715 85	2,144 24	10,860 09
West Brookfield . . . . .	18,113 24	672 36	18,785 60	44,918 64	1,603 50	46,522 14
Westfield . . . . .	35,918 71	2,365 03	38,283 74	45,888 89	3,186 67	49,075 56
Westford . . . . .	13,698 53	2,164 85	15,863 38	12,971 08	6,399 54	19,370 62
Westminster . . . . .	29,735 16	2,555 34	32,290 50	76,097 16	5,765 14	81,862 30
West Newbury . . . . .	23,019 56	1,963 47	24,983 03	16,366 97	4,987 99	21,354 96
Weston . . . . .	24,876 62	736 40	25,613 02	42,141 46	1,148 22	43,289 68
Westport . . . . .	37,604 25	2,088 85	39,693 10	55,128 63	6,041 80	61,170 43
West Springfield . . . . .	11,510 28	74 90	11,585 18	50,354 26	694 33	51,048 59
West Tisbury . . . . .	5,755 47	633 78	6,389 25	19,030 35	1,223 61	20,253 96
Westwood . . . . .	12,888 39	92 20	12,980 59	14,576 75	268 23	14,844 98
Weymouth . . . . .	32,413 77	2,455 09	34,868 86	89,359 64	11,652 73	101,012 37
Whately . . . . .	15,841 61	446 27	16,287 88	47,590 14	933 38	48,523 52
Whitman . . . . .	6,549 34	499 15	7,048 49	17,453 27	2,289 23	19,742 50
Wilbraham . . . . .	26,769 11	730 04	27,499 15	99,450 99	1,458 67	100,909 66
Williamsburg . . . . .	8,634 98	832 16	9,467 14	32,464 74	2,741 66	35,206 40
Williamstown . . . . .	14,711 21	238 49	14,999 70	43,862 06	514 92	44,376 98
Wilmington . . . . .	5,391 96	749 14	6,141 10	20,521 09	55,008 61	75,529 10
Winchendon . . . . .	12,574 96	3,474 63	16,049 59	29,376 65	11,466 45	40,843 10
Winchester . . . . .	11,425 88	1,470 74	12,896 62	15,099 56	1,769 02	16,868 58
Windsor . . . . .	2,560 73	150 00	2,710 73	4,909 56	1,098 90	6,008 46
Woburn . . . . .	11,965 37	2,889 58	14,854 95	11,511 02	1,901 20	13,412 22
Worcester . . . . .	32,887 65	1,281 07	34,168 72	73,893 13	1,934 54	75,827 67
Wrentham . . . . .	17,723 24	2,121 58	19,844 82	63,587 08	5,734 24	69,321 32
Yarmouth, North } . . . . .	22,393 67	1,875 38	24,269 05	51,159 33	5,642 37	56,801 70
Yarmouth, South }						
Totals . . . . .	\$3,850,201 74	\$358,889 44	\$4,209,091 18	\$9,257,793 46	\$1,619,694 17	\$10,877,487 63

Total expended.	AVERAGE EXPENDITURE PER MILE IN 1920.			Average Cost per Mile per Year.	Length under Main- tenance (Miles).	Amount to be assessed on Cities and Towns under 1920 Ex- penditures.
	From Revenue Appro- priation.	From Motor Vehicle Fees Fund.	Total.			
85,444 39	\$84 81	\$67 45	\$152 26	\$275 24	3.618	\$275 44
158,507 01	319 60	1,940 38	2,259 98	1,538 93	4.857	971 40
150,792 47	412 12	470 04	882 16	961 03	9.918	1,983 66
51,751 86	176 94	205 79	382 73	3,206 83	1.583	302 93
3,199 77	288 21	745 38	1,033 59	305 37	.708	35 40
20,681 49	256 20	438 72	694 92	428 66	3.691	738 20
12,459 56	92 01	159 75	251 76	549 48	1.357	170 82
110,356 86	305 79	544 13	849 92	918 09	7.371	3,132 40
46,737 63	144 69	288 81	433 50	947 08	3.060	612 00
32,520 97	309 10	334 16	643 26	369 04	8.159	815 90
42,644 28	435 71	319 42	755 13	972 39	4.253	850 60
74,445 30	1,014 24	20,196 14	21,210 38	2,283 03	1.582	3,164 00
58,972 51	265 99	1,665 47	1,931 46	903 50	5.561	5,370 42
18,700 88	200 58	524 77	725 35	516 38	2.353	235 30
193,889 01	57 72	373 04	430 76	1,967 22	5.114	511 40
31,324 19	57 52	196 16	253 68	766 07	3.971	198 55
27,035 05	163 88	478 81	642 69	593 91	6.898	689 80
44,981 18	305 07	356 81	661 88	1,419 36	1.491	493 43
99,790 42	826 13	1,448 83	2,274 96	1,081 81	9.460	1,892 00
91,686 45	169 93	343 70	513 63	796 54	9.150	2,349 87
64,555 94	234 17	978 84	1,213 01	780 01	5.688	1,137 60
177,897 78	27 90	688 65	716 55	1,695 13	6.186	1,237 20
29,938 20	7 16	145 24	152 40	612 45	1.926	146 76
46,214 61	288 45	867 00	1,155 45	425 95	6.034	603 40
62,641 09	216 20	3,599 58	3,815 78	800 01	10.095	504 75
54,718 15	638 01	499 36	1,137 37	503 22	6.940	347 00
4,017 78	395 22	469 46	864 68	775 03	3.493	349 36
27,847 65	574 41	504 58	1,078 99	444 92	4.815	2,597 65
4,624 94	26 21	312 67	338 88	226 86	5.100	255 00
84,202 10	366 58	953 38	1,319 96	778 76	5.275	3,481 41
25,992 79	254 31	957 39	1,211 70	390 10	4.176	2,530 02
120,965 93	151 75	425 86	577 61	915 87	13.236	3,822 62
142,289 81	79 98	154 58	234 56	1,741 57	4.940	579 36
159 25	-	75 58	75 58	283 36	2.167	79 63
21,233 08	821 62	638 58	1,460 20	1,633 64	.850	620 60
83,893 35	124 27	686 02	810 29	1,597 45	2.861	572 20
18,654 54	314 50	310 45	624 95	787 54	2.600	812 44
24,666 60	300 57	100 32	400 89	1,087 21	1.176	235 72
83,101 73	256 07	8,004 23	8,260 30	1,004 33	7.366	368 30
68,714 75	394 51	19,553 10	19,947 61	1,981 33	1.762	352 40
16,778 60	290 63	813 66	1,104 29	332 67	2.991	598 20
55,219 58	119 09	177 85	296 94	1,104 22	4.303	430 30
33,598 44	145 53	678 34	823 87	579 42	3.161	316 10
65,307 74	237 67	566 81	804 48	1,323 35	2.829	282 90
87,359 30	407 20	548 66	955 86	692 02	5.808	2,775 85
35,234 00	437 34	1,292 84	1,730 18	500 14	4.950	990 00
114,152 80	318 34	718 22	1,036 56	1,004 13	8.027	802 70
46,337 99	384 62	977 08	1,361 70	515 91	5.105	510 50
68,962 70	233 63	364 28	597 91	1,041 58	3.152	942 31
100,863 53	455 28	1,316 87	1,772 15	949 34	4.588	917 60
62,633 77	27 70	256 78	284 48	1,402 27	2.704	384 62
26,643 21	118 29	228 38	346 67	247 35	5.358	267 90
27,825 57	86 08	250 45	336 53	1,297 04	1.071	180 22
135,881 23	269 28	1,278 13	1,547 41	1,097 35	9.117	7,053 91
64,811 40	110 85	231 84	342 69	957 62	4.026	201 30
26,790 99	125 13	573 89	699 02	442 45	3.989	1,394 19
128,408 81	144 42	288 56	432 98	1,319 38	5.055	1,011 00
44,673 54	310 51	1,023 01	1,333 52	826 15	2.680	268 00
59,376 68	103 22	184 23	287 45	1,317 84	2.795	401 71
81,670 20	203 63	14,951 89	15,155 52	2,129 60	3.679	735 80
56,892 69	472 35	1,558 79	2,031 14	1,719 38	7.356	1,471 20
29,765 20	753 45	906 26	1,659 71	740 87	1.952	1,619 88
8,719 19	30 64	224 45	255 09	185 09	4.896	244 80
28,267 17	526 72	346 55	873 27	523 69	5.486	2,395 39
109,996 39	314 60	475 08	789 68	1,354 11	4.072	1,607 81
89,166 14	222 96	602 53	825 49	681 99	9.517	951 70
81,070 75	213 16	641 32	854 48	386 74	8.798	1,759 60
\$15,086,578 81	-	-	-	-	1,306.837	\$312,204 69

SPECIAL HIGHWAY IMPROVEMENTS AUTHORIZED BY ACTS  
PASSED IN 1920.

*Paxton and Rutland.*

This act (chapter 519) authorized the Division to expend during 1920 the sum of \$10,000 in the construction of the main county highway, beginning at the present improved highway in Paxton, running through West Rutland and ending at the present State highway in West Rutland in the town of Rutland; \$3,500 of said sum to be paid by Worcester County and \$1,500 by the town of Rutland.

No work has been done during the year except to make survey.

*Clinton.*

This act (chapter 520) authorized the Division to expend during 1920 the sum of \$35,000, 50 per cent thereof to be paid by the town of Clinton and 50 per cent by the county of Worcester, in the construction and improvement of the Clinton-West Boylston road, so called, in Clinton.

No work has been done during the year, except to make survey.

Expenditure to Dec. 1, 1920, \$127.75.

*Holden.*

This act (chapter 521) authorized the Division to expend during 1920 the sum of \$40,000, 65 per cent of said sum to be paid by Worcester County and 35 per cent by the town of Holden, in the construction and improvement of a highway in the town of Holden, beginning at the end of the improved road leading from Holden Center to Quinnapoxett Village in said town and extending toward the town of Princeton.

No work has been done during the year, except to make survey.

Expenditure to Dec. 1, 1920, \$385.66.



*Templeton.*

This act (chapter 522) authorized the Division to expend during 1920 the sum of \$6,000, 50 per cent of said sum to be paid by the town of Templeton and 50 per cent by Worcester County, for the construction or improvement of a highway in Templeton known as Royalston Road, leading from the village of Baldwinsville to the dividing line between Templeton and Phillipston.

The work done in 1920 consisted in the construction of an 8-inch gravel road, 18 feet wide, beginning at a point 5,550 feet easterly from the Phillipston line and extending in an easterly direction 2,700 feet.

The total expenditure was \$5,905.48.

*Westborough.*

This act (chapter 536) authorized the Division to expend during 1920 the sum of \$14,000, 50 per cent of said sum to be paid by the town of Westborough and 50 per cent by Worcester County, for the improvement of the main highway in the town of Westborough from the corner of East Main and Lyman streets, continuing towards Westborough Center.

No work has been done during the year, except to make survey.

*Chester, Middlefield, Peru and Hinsdale.*

This act (chapter 566) authorized the Division to expend during 1920 the sum of \$60,000 for the construction and improvement of the highway leading from Chester Village in the town of Chester to Middlefield Center, and thence through a part of the town of Peru to the town of Hinsdale. Of the amount authorized to be expended by this act, \$10,000 shall be paid by Middlefield, and such sums by Chester, Peru and Hinsdale as may be agreed upon by said towns, respectively, and said Division. The amounts required of Middlefield, Chester, Peru and Hinsdale shall be paid on order of the Division, and said towns are authorized to receive gifts or contributions from individuals or corporations to be used toward providing the sums required of them under the provisions of this

act. It was also provided that the counties of Berkshire, Hampden and Hampshire shall each repay to the Commonwealth 25 per cent of the cost to the Commonwealth of that part of the road which is situated in said counties, respectively.

No work has been done during the year, except to make survey.

Expenditure to Dec. 1, 1920, \$318.94.

*Blandford, Otis, Monterey and Great Barrington.*

This act (chapter 571) authorized the Division to expend during 1920 not exceeding \$25,000 for the construction of a highway from the village of Blandford in the town of Blandford through the villages of East Otis, Otis, West Otis and Monterey to the town of Great Barrington, 50 per cent of said sum to be repaid by the counties of Berkshire and Hampden in proportion to the length of road improved under this act in each of said counties.

No work has been done during the year.

WORK DONE OR EXPENDITURES MADE DURING 1920  
UNDER SPECIAL AUTHORITY OF THE LEGISLATURE  
PREVIOUS TO 1920.

1915.

*Southwick.*

Chapter 221, General Acts, authorized the construction and completion of highways in the five western counties of the State.

March 4, 1920, contract made with the Lane Construction Corporation of Meriden, Conn., for the construction of 7,900 feet of road, consisting of bituminous macadam 18 feet wide, in Southwick. The proposal amounted to \$41,679.

To Dec. 1, 1920, 95 per cent of the work had been completed.

Total expenditure to Dec. 1, 1920, \$44,008.84.

1916.

*Hingham.*

Chapter 213, General Acts, authorized and directed the Massachusetts Highway Commission to construct and maintain a State highway in Hingham from the easterly end of the State highway on Lincoln Street in Hingham to the boundary lines of Cohasset and Hull at West's Corner.

Apportionment of expense:  $37\frac{1}{2}$  per cent to the Commonwealth; 25 per cent to the county of Plymouth;  $37\frac{1}{2}$  per cent to the town of Hingham.

Expenditure during 1920, \$4,919.86.

Total expenditure to Dec. 1, 1920, \$88,605.70.

1918.

*Leominster.*

Chapter 236, General Acts, authorized the Massachusetts Highway Commission to expend during 1918 the sum of \$20,000 in the construction or improvement of Prospect Street in Leominster, beginning at the town line of Lunenburg and extending westerly towards North Leominster.

Apportionment of expense: \$10,000 to be paid by Leominster; \$5,000 to be paid by Worcester County; and \$5,000 to be paid by the Commonwealth.

Expenditure during 1920, \$4,695.

Total expenditure to Dec. 1, 1920, \$5,221.45.

### 1919.

#### *Leominster.*

Chapter 231, Special Acts, authorized the Massachusetts Highway Commission to expend during 1919 a further sum of \$24,000 in the construction or improvement of Prospect Street in Leominster, beginning at the town line of Lunenburg and extending westerly toward North Leominster.

Apportionment of expense: \$12,000 to be paid by Leominster and \$6,000 to be paid by Worcester County.

Expenditure during 1920, \$5,778.55.

Total expenditure to Dec. 1, 1920, \$5,778.55.

#### *Holland and Brimfield.*

Chapter 232, Special Acts, authorized the Massachusetts Highway Commission to expend during 1919 the sum of \$10,000 in the construction or improvement of Holland Road in Holland and Brimfield, beginning at the intersection of Holland Road with the highway running from Brimfield to Sturbridge, easterly of Brimfield Center, and thence following the line of Holland Road to Holland Center. One-fourth of the expense of constructing said highway to be repaid by Hampden County to the Commonwealth.

Expenditure during 1920, \$5,392.35.

Total expenditure to Dec. 1, 1920, \$7,903.42.

#### *Holden.*

Chapter 233, Special Acts, authorized the Massachusetts Highway Commission to expend the sum of \$20,000 in the construction or improvement of a highway between Holden and the Wachusett Mountain State Reservation, beginning about eight-tenths of a mile south of Princeton Center and continuing toward the village of Quinnapoxett, provided Princeton appro-

priates \$10,000 to be used with the \$20,000 allowed by the Commonwealth; Worcester County to repay to the Commonwealth one-third of said \$20,000 in the manner provided by section 13 of Part 1 of chapter 344, General Acts of 1917. The towns of Princeton and Holden to assume and pay all land and grade damages.

Expenditure during 1920, \$25,852.57.

Total expenditure to Dec. 1, 1920, \$26,495.10.

#### *Middlefield.*

Chapter 240, Special Acts, authorized the Massachusetts Highway Commission to expend the sum of \$10,000 during 1919 in the reconstruction and improvement of the highway located in Middlefield and extending from the northerly line of Chester to the southerly line of Worthington through that portion of Middlefield known as Smith's Hollow and substantially parallel with the middle branch of the Westfield River.

Expenditure during 1920, \$7,113.73.

Total expenditure to Dec. 1, 1920, \$9,960.73.

#### *Westborough.*

Chapter 335, General Acts, authorized the Massachusetts Highway Commission to improve during 1919 the highway between Westborough and the village of North Grafton, which serves the Grafton State Hospital, and to expend the sum of \$12,000. Upon the completion of said improvement, one-third of the cost to be reimbursed to the Commonwealth by Worcester County, and one-third by Westborough and Grafton in proportion to the amount expended in said towns, as determined by the said commission.

Expenditure during 1920, \$4,000.

Total expenditure to Dec. 1, 1920, \$4,000.

#### *North Brookfield.*

Chapter 336, General Acts, authorized the Massachusetts Highway Commission to expend the sum of \$25,000 during 1919 in the construction and improvement of the highway from North Brookfield to New Braintree from the end of the mac-



adam highway in North Brookfield, at the junction of the Oakham road with the road leading from North Brookfield to New Braintree, to the point on the New Braintree road to which a macadam highway has been constructed on the North Brookfield side of the New Braintree and North Brookfield line.

Apportionment of expense: 50 per cent by the Commonwealth; 25 per cent by Worcester County; and 25 per cent by North Brookfield.

Expenditure during 1920, \$16,531.10.

Total expenditure to Dec. 1, 1920, \$17,958.30.

#### *Hubbardston and Rutland.*

Chapter 337, General Acts, authorized the Massachusetts Highway Commission to expend during 1919 the sum of \$50,000 in addition to the amount authorized for the same purpose by chapter 210, General Acts of 1916, in the further construction and improvement of the highway from Gardner to Worcester in the towns of Hubbardston and Rutland.

Apportionment of cost: 40 per cent to be paid by the Commonwealth; 40 per cent by Worcester County, and 20 per cent by Hubbardston for that part of the highway which is in Hubbardston, and 20 per cent by Rutland for that part of the highway which is in Rutland.

Sept. 14, 1920, contract made with Hinman & Rudiger of Sturbridge for the construction of 9,400 feet of gravel road 15 feet wide. The proposal amounted to \$27,530.60.

To Dec. 1, 1920, 60 per cent of the work had been completed.

Expenditure during 1920, \$27,954.64.

Total expenditure to Dec. 1, 1920, \$28,225.42.

#### *Holyoke.*

Chapter 338, General Acts, authorized the Massachusetts Highway Commission to construct a section of highway in Holyoke along and over the Easthampton road from Northampton Street in Holyoke to the Holyoke-Easthampton line in Holyoke, and to expend a sum not exceeding \$50,000, Holyoke to reimburse the Commonwealth for one-half, and Hampden County for one-quarter of the amount expended.



Sept. 14, 1920, contract made with Daniel O'Connell's Sons of Holyoke for the construction of 5,032 feet of highway consisting of bituminous macadam 18 feet wide. The proposal amounted to \$50,609.

To Dec. 1, 1920, 5 per cent of the work had been completed.

Expenditure during 1920, \$1,488.28.

Total expenditure to Dec. 1, 1920, \$1,878.56.

*Milford-Southborough-Hopkinton.*

Chapter 339, General Acts, authorized the Massachusetts Highway Commission to expend the sum of \$10,000 during 1919 in the construction and improvement of the highway leading from the present highway in Milford, at a point near the Milford Pine Grove Cemetery, through Hopkinton, to the present highway in Southborough at the point where the highway from Hopkinton enters Southborough at Cordaville railroad bridge. Of the amount expended, \$5,000 to be paid by the Commonwealth, and, upon the completion of the work, \$2,500 to be paid by Worcester County into the treasury of the Commonwealth, and \$2,500 to be paid by Milford.

April 28, 1920, contract made with Cenedella & Co. of Milford for the construction of 1,900 feet of road, consisting of bituminous macadam 17 feet wide, in Milford.

Work completed Sept. 28, 1920.

Expenditure during 1920, \$7,354.25.

Total expenditure to Dec. 1, 1920, \$7,437.85.

*Dracut-Methuen.*

Chapter 340, General Acts, authorized the Massachusetts Highway Commission further to construct and improve a continuous section of highway from Lawrence to Lowell in the town of Dracut and city of Methuen, beginning at the junction of Broadway and Arlington Street, continuing by Broadway and Arlington Street in Dracut, and thence by Broadway and North Lowell Street in Methuen, and to expend not exceeding \$20,000, of which amount 25 per cent is to be repaid by the county within which the road is situated.

No expenditure made to Dec. 1, 1920.

*Norton.*

Chapter 348, General Acts, authorized the Massachusetts Highway Commission to construct as a State highway a part of the highway in Norton beginning at a point on Main Street near Woodward's Mill where the present State highway ends, and continuing through Main Street to the Easton town line, and to expend a sum not exceeding \$20,000. Upon the completion of said highway Bristol County shall, upon request of said commission, giving a statement of the total cost of said highway, pay into the treasury of the Commonwealth 35 per cent of the total cost.

Total expenditure to Dec. 1, 1920, \$119.23.

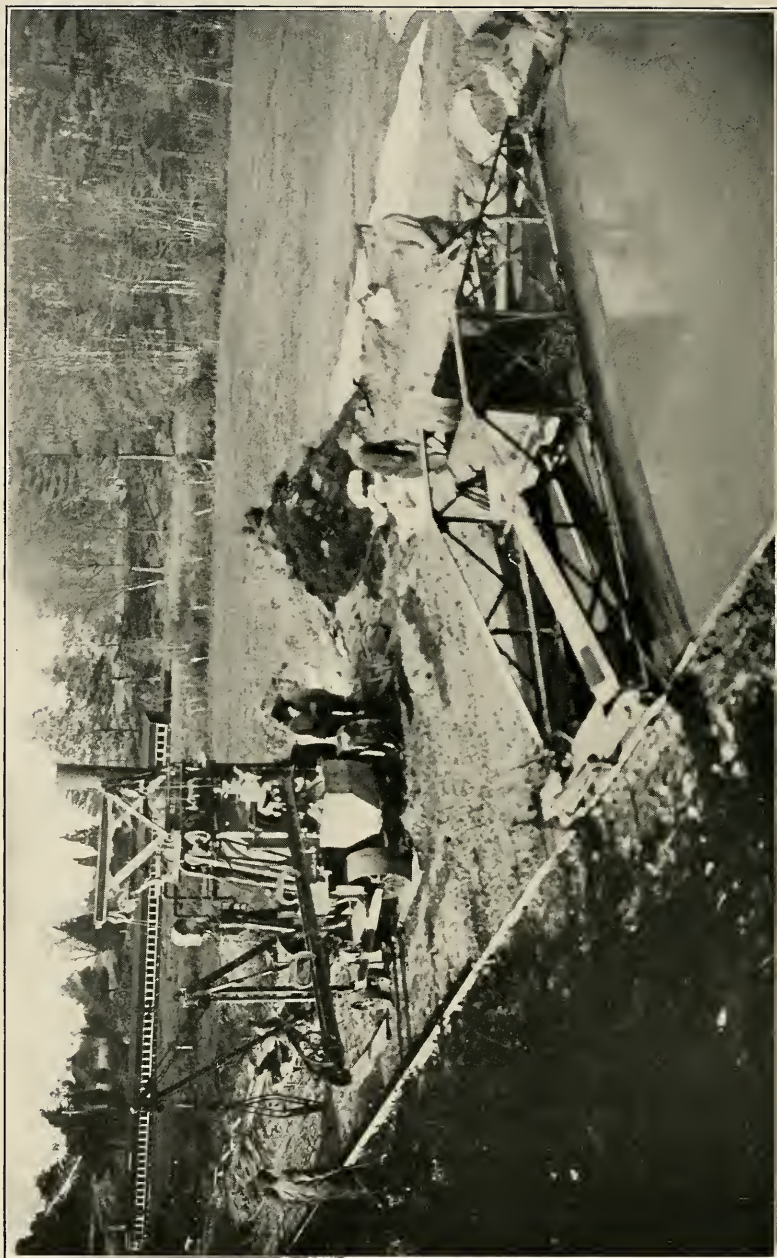
*Williamstown.*

Chapter 62, Resolves, provided for an investigation relative to the construction of a State highway in the town of Williamstown. The Division submitted a report on this matter under date of Jan. 7, 1920 (House No. 600 of 1920), its conclusion being that public necessity and convenience do not require the laying out and construction of a State highway in this town as set forth in the resolve.

Expenditure during 1920, \$82.70.

Total expenditure to Dec. 1, 1920, \$256.83.





Concrete road under construction in Taunton, 1920.

## FEDERAL AID IN CONSTRUCTING HIGHWAYS.

An act to provide that the "United States shall aid the States in the construction of rural post roads, and for other purposes," was passed by Congress, and approved July 11, 1916, the Federal government appropriating and making available during the five following years the total amount of \$75,000,000 for use in aiding the States in the construction of certain roads agreed upon between the Secretary of Agriculture and the highway departments of the various States.

This act provided that one-half of the cost of constructing any project agreed upon between the Secretary of Agriculture and the State highway department shall be provided for from the State or local funds, and that the amount that the Federal government shall pay on any mile of road shall not exceed \$10,000 a mile for its half, exclusive of the cost of bridges of more than 20 feet clear span.

By chapter 67, General Acts of 1917, Massachusetts accepted the provisions of the act of Congress aforesaid and authorized the Massachusetts Highway Commission to make contracts and agreements "and to do all other things necessary to co-operate with the United States government in the construction and maintenance of rural highways, under the provisions of the act of congress aforesaid, and to submit such plans, estimates, and programs for the improvement of highways as will meet the requirements of the secretary of agriculture under the provisions of the said act, and for this purpose it is hereby authorized to use any moneys which it may have available for the construction and maintenance of state highways, whether appropriated from the treasury of the commonwealth, or placed at the disposal of the commission by the provisions of section thirty of chapter five hundred and thirty-four of the acts of the year nineteen hundred and nine and the amendments thereof."

A general scheme, comprising several different routes which the State proposed to adopt in the expenditure of Federal aid,



was submitted in March, 1917, and was approved by the Federal authorities.

Chapter 18, General Acts of 1918, amended section 2 of chapter 67, General Acts of 1917, as follows:—

The Massachusetts highway commission is hereby authorized to make all contracts and agreements, and to do all other things necessary to co-operate with the United States government in the construction and maintenance of rural highways, under the provisions of the act of congress aforesaid, and to submit such plans, estimates, and programs for the improvement of highways as will meet the requirements of the secretary of agriculture under the provisions of the said act, and for this purpose it is hereby authorized to use any moneys which it may have available for the construction and maintenance of state highways. The said commission is also authorized to use any money heretofore or hereafter appropriated by the general court for the construction of specific highways or routes, the money appropriated from the fees obtained from the licensing of motor vehicles, or from towns under the provisions of section twenty-three of Part 1 of chapter three hundred and forty-four of the General Acts of nineteen hundred and seventeen, and also any money received from the federal government on account of the construction of highways. The said commission is also authorized for the purpose of securing federal aid to use any money appropriated by a county, city or town for the construction of a road or any part thereof for which federal aid may be secured, and to make any contracts or agreements involving the expenditure of said money, provided the county commissioners of the county or the selectmen or duly authorized officials of the city or town have agreed in writing to pay the money thus appropriated upon the order of said commission. Said commission is also authorized to maintain the roads constructed under the provisions of this act or of said act of congress, from any money appropriated by the general court for the maintenance of state highways or for the repair or maintenance of town or county ways.

Chapter 18 aforesaid also provided that “the treasurer and receiver general is hereby authorized to receive from the United States any and all sums of money payable to this commonwealth under any act of congress for the construction of any highways therein. The sums so received shall be expended upon the order or approval of the Massachusetts highway commission without specific appropriation.”

Special Acts of 1918, chapter 18, further authorized the Massachusetts Highway Commission “to expend during the



years nineteen hundred and eighteen, nineteen hundred and nineteen and nineteen hundred and twenty the unexpended balance of the five million dollars authorized for the construction of state highways by chapter seven hundred and four of the acts of nineteen hundred and twelve, and the unexpended balances of such appropriations or authorizations as have been heretofore made by the general court for the construction of specific highways or routes, in accordance with the several provisions of law originally authorizing said expenditures."

Chapter 89, General Acts of 1919, further amended chapter 67, General Acts of 1917, as amended by chapter 18, General Acts of 1918, by adding a new section providing that "the Massachusetts highway commission is hereby authorized to make any agreements or contracts that may be required to secure federal aid in the construction of highways under the provisions of the act of congress aforesaid, and of all other acts in amendment thereof, or in addition thereto, and may, in such agreements or contracts, provide, among other things, for such labor preferences to honorably discharged soldiers, sailors and marines as are made necessary by federal legislation, and may provide that no other preference or discrimination among citizens of the United States shall be made in connection with the expenditure of any money received from the federal government by virtue of the said legislation."

The act of Congress, approved July 11, 1916, was amended by an "Act making appropriations for the services of the Post Office Department for the fiscal year ending June 30, 1920, and for other purposes," approved Feb. 28, 1919. Under the amended act additional amounts were appropriated as follows: the sum of \$50,000,000 for the fiscal year ending June 30, 1919; \$75,000,000 for the fiscal year ending June 30, 1920; \$75,000,000 for the fiscal year ending June 30, 1921.

The act of 1919 also provided that section 6 of said act of Congress, approved July 11, 1916, "be further amended so that the limitation of payments not to exceed \$10,000 per mile, exclusive of the cost of bridges of more than twenty feet clear span, which the Secretary of Agriculture may make, be, and the same is, increased to \$20,000 per mile."

The following allotments have thus far been made to Massachusetts: —

For fiscal year ending June 30, 1917 . . . . .	\$73,850 95
For fiscal year ending June 30, 1918 . . . . .	147,701 90
For fiscal year ending June 30, 1919 . . . . .	958,145 15
For fiscal year ending June 30, 1920 . . . . .	1,400,078 27
For fiscal year ending June 30, 1921 . . . . .	1,472,788 83
Total . . . . .	<u>\$4,052,565 10</u>

The total amount received by Massachusetts from 1916 to Nov. 30, 1920, is \$481,210.69.

Projects to the number of 17 have been prepared in addition to those shown in the report of the Massachusetts Highway Commission for 1919. The total mileage included in the various Federal-aid road projects in this State, from the commencement of work of this character to Nov. 30, 1920, inclusive, is 170.231. The mileage in the various counties is: —

COUNTY.	Miles.
Barnstable . . . . .	30.605
Berkshire . . . . .	26.533
Bristol . . . . .	7.054
Essex . . . . .	19.470
Franklin . . . . .	15.984
Hampden . . . . .	6.563
Hampshire . . . . .	14.445
Middlesex . . . . .	20.211
Norfolk . . . . .	2.420
Plymouth . . . . .	7.088
Worcester . . . . .	19.858
Total . . . . .	<u>170.231</u>

STATEMENT OF FEDERAL-AID ROAD PROJECTS. <sup>1</sup>

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
1	Acushnet-Fairhaven . . .	2.182	\$21,820 00 <sup>2</sup>	\$21,820 00	Work completed.
2	Hanover . . . . .	2.708	19,480 36 <sup>2</sup>	19,480 36	Work completed.
3	Malden-Melrose-Saugus . . .	1.162	11,620 00 <sup>2</sup>	11,620 00	Work completed.
4	Danvers . . . . .	1.325	15,460 22 <sup>2</sup>	15,460 22	Work completed.
5	Windsor-Dalton . . . . .	3.240	59,216 30 <sup>2</sup>	32,764 45	Work under way.
6	Sandwich . . . . .	1.818	10,678 02 <sup>2</sup>	—	Work completed.
7	Cummington . . . . .	4.659	86,816 53 <sup>2</sup>	4,426 45	Work under way.
8	Athol-Petersham . . . . .	7.016	90,319 04 <sup>2</sup>	64,570 95	Work completed.
9	Saugus . . . . .	3.122	65,472 27 <sup>2</sup>	27,037 78	Work under way.
10	Braintree . . . . .	2.420	40,687 37 <sup>2</sup>	29,805 08	Work completed.
11	Concord-Acton-Littleton . . .	4.849	79,106 22 <sup>2</sup>	62,985 35	Work completed.
12	Ipswich . . . . .	2.173	21,851 50 <sup>2</sup>	—	Work completed.
13	Littleton-Groton . . . . .	6.450	130,504 25 <sup>2</sup>	8,392 11	Work under way.
14	Barnstable . . . . .	3.331	26,062 57 <sup>2</sup>	15,605 51	Work completed.
15	Norwell-Hingham . . . . .	4.380	61,169 35 <sup>2</sup>	12,942 44	Work under way.
17	Lynnfield-Peabody . . . . .	1.794	35,880 00 <sup>2</sup>	—	Work under way.
18	Lunenburg . . . . .	2.797	55,940 00 <sup>2</sup>	13,636 44	Work under way.
19	Taunton . . . . .	2.116	42,320 00 <sup>2</sup>	14,243 13	Work under way.
20	Tewksbury-Wilmington . . . .	2.909	35,211 82 <sup>2</sup>	26,098 73	Work completed.
21	Pittsfield-Hancock . . . . .	3.637	72,740 00 <sup>2</sup>	32,011 69	Work under way.
22	Greenfield-Bernardston . . . .	6.426	57,519 71 <sup>2</sup>	9,263 45	Work under way.
23	Great Barrington . . . . .	2.124	31,573 87 <sup>2</sup>	—	Work completed.
24	Seekonk . . . . .	2.756	19,527 75 <sup>2</sup>	13,666 84	Work completed.
25	Billerica . . . . .	.597	38,389 77 <sup>2</sup>	3,389 34	Work under way.
26	Greenfield-Shelburne (section 1)	5.134	102,680 00 <sup>2</sup>	24,527 28	Work under way.
	Greenfield-Shelburne (section 2)	4.424	88,480 00	—	Project approved.
27	Hamilton-Wenham . . . . .	1.766	22,756 08 <sup>2</sup>	—	Work completed.
28	Lanesborough:				
	Section A . . . . .	.990	19,780 00 <sup>2</sup>	3,274 86	Work completed.
	Section B . . . . .	2.680	53,800 00 <sup>2</sup>	—	— —
29	Ware . . . . .	2.626	46,557 55 <sup>2</sup>	7,688 99	Work under way.
30	Brimfield . . . . .	4.238	75,889 00 <sup>2</sup>	—	— —
31	Danvers-Peabody . . . . .	1.107	22,140 00 <sup>2</sup>	—	Work completed.
32	Huntington . . . . .	3.078	86,948 26 <sup>2</sup>	6,499 24	Work under way.

<sup>1</sup> All of these projects are now, or will be later, State highways.<sup>2</sup> Signed agreements.

STATEMENT OF FEDERAL-AID ROAD PROJECTS <sup>1</sup>—*Concluded.*

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
33	Acton-Littleton:				
	Section A . . . .	2.182	43,640 00 <sup>2</sup>	-	Work under way.
	Section B . . . .	1.624	32,480 00	-	- -
34	Dudley . . . .	1.359	27,180 00 <sup>2</sup>	-	Work under way.
35	Haverhill-Methuen . . . .	4.544	90,880 00	-	Project approved.
36	Eastham-Wellfleet-Truro- Provincetown:				
	Section A . . . .	10.690	91,347 85 <sup>2</sup>	-	Work under way.
	Section B . . . .	6.719	75,936 70 <sup>2</sup>	-	- -
	Section C . . . .	8.047	86,130 57 <sup>2</sup>	-	Work under way.
37	Egremont . . . .	1.164	20,579 07 <sup>2</sup>	-	Work under way.
38	Peabody-Danvers . . . .	2.827	56,540 00 <sup>2</sup>	-	Work under way.
39	Williamstown-New Ashford- Lanesborough.	7.923	147,195 00	-	Project approved.
40	East Brookfield . . . .	1.011	20,220 00 <sup>2</sup>	-	Contract awarded.
41	Ashby . . . .	1.250	11,517 00 <sup>2</sup>	-	- -
42	Washington . . . .	2.291	45,820 00 <sup>2</sup>	-	- -
43	Leicester . . . .	.638	12,760 00 <sup>2</sup>	-	Work under way.
44	Goshen-Cummington-Windsor	6.566	131,320 00	-	Project approved.
45	Palmer . . . .	2.325	39,880 00	-	Contract awarded.
46	Upton-Hopedale . . . .	4.261	85,220 00	-	Project approved.
47	Barre-Oakham . . . .	1.738	34,760 00	-	Project approved.
48	Templeton . . . .	1.038	14,850 00	-	Project forwarded.
	Totals . . . .	170.231	\$2,716,654 00	\$481,210 69	

<sup>1</sup> All of these projects are now, or will be later, State highways.      <sup>2</sup> Signed agreements.

## FEDERAL DISTRIBUTION OF ROAD EQUIPMENT, ETC.

The Division has received from the Secretary of Agriculture certain road equipment, etc., in accordance with an act of Congress approved Feb. 28, 1919, which provides, in section 7, "That the Secretary of War be, and he is hereby, authorized in his discretion to transfer to the Secretary of Agriculture all available war material, equipment, and supplies not needed for the purposes of the War Department, but suitable for use in the improvement of highways, and that the same be distributed among the highway departments of the several States to be used on roads constructed in whole or in part by Federal aid, such distribution to be made upon a value basis of distribution the same as provided by the Federal aid road act, approved July 11, 1916: Provided, That the Secretary of Agriculture, at his discretion, may reserve from such distribution not to exceed 10 per centum of such material, equipment, and supplies for use in the construction of national forest roads or other roads constructed under his direct supervision."

A schedule of what has been received during the fiscal year ending Nov. 30, 1920, follows: —

*Miscellaneous Equipment.*

Tanks, 165-gallon G. I. . . . .	18
Pump, Barnes plunger and 6 H. P. gas engine, complete . . . . .	1
Plow turn . . . . .	1
Double tree for plow . . . . .	1
Wheelbarrows . . . . .	17
Single trees . . . . .	2
Hoist, chain, 1 T. C. & M. Cyclone, black . . . . .	1
Tables, folding, 24" x 36" . . . . .	2
Pumps, hand D. A. piston force (Ward Company) . . . . .	28
Derrick, 5-ton, No. 36113 (14 pieces) . . . . .	1
Brooms, stable, with handles . . . . .	167
Shelters, trench (complete) . . . . .	5
Sheets, roofing metal . . . . .	1,162
Sets, chains, skid, Stanley, 40" x 6" . . . . .	13
Lanterns, railroad . . . . .	151
Chains, skid, Packard . . . . .	60
Bows, wood for tops, Nash Quad driver's seat . . . . .	78
Bodies, Ford delivery, with tops and fenders . . . . .	6
Brooms, stable . . . . .	50
Lanterns, folding, galvanized iron . . . . .	93

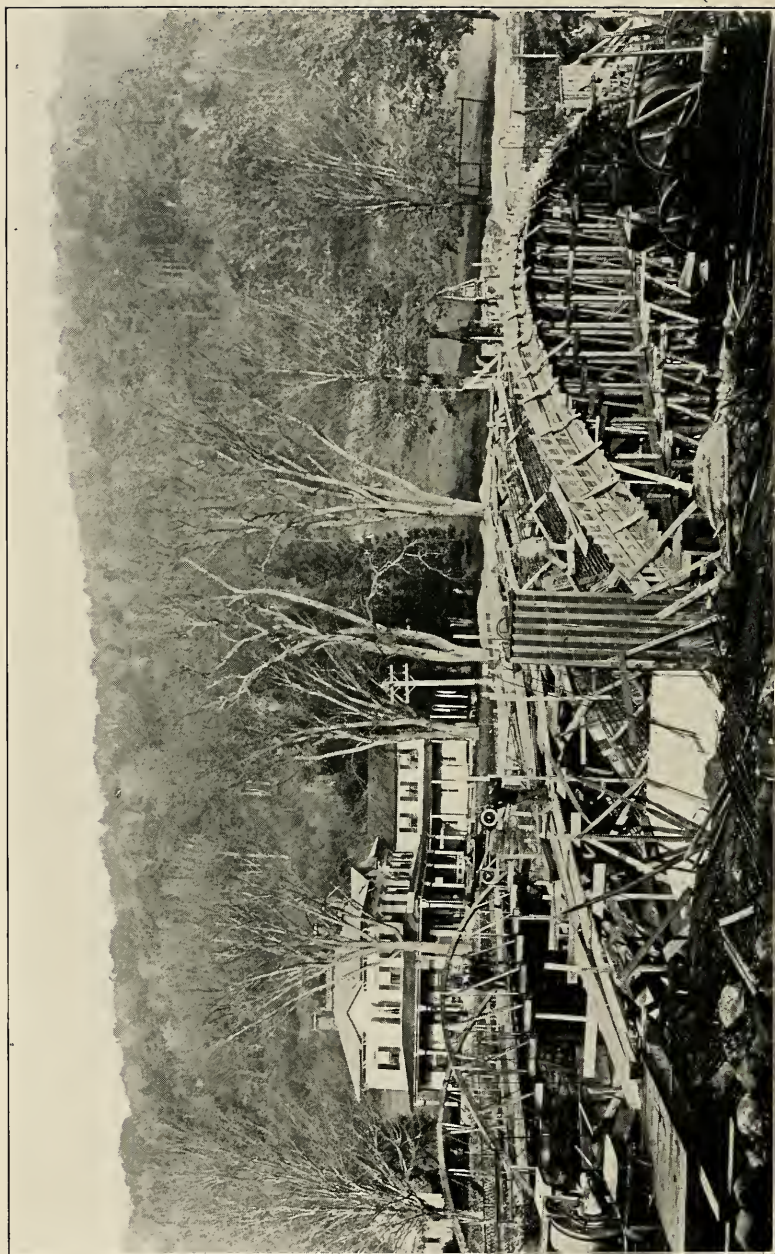
Shovels . . . . .	7
Picks . . . . .	9
Picks, no handles . . . . .	15
Handles, pick . . . . .	740
Heavy aviation spare parts (lot) . . . . .	1
Nash Quad spare parts (lot) . . . . .	2
Nash Quad springs, complete . . . . .	61
Nash Quad tops (lot) . . . . .	1
Nash Quad steel wheels, unfinished . . . . .	100
Packard clutch covers (lot) . . . . .	1
Packard transmission covers (lot) . . . . .	3
Selden, spare parts, steering spider (lot) . . . . .	1
Tires (lot) . . . . .	1
Shovels, entrenching E. D. . . . .	37
Corona typewriters . . . . .	7
Chains, Stanley (hook skid), 40" x 6" (sets) . . . . .	5
Forges, portable (complete) . . . . .	21
Wagons, sprinkling, 450 gallons, pump and hose . . . . .	3
Transit Engineer No. 8672, Young & Son . . . . .	1
Tapes, steel, 100', Lufkin . . . . .	5
Engine, hoisting steam, three drum, 7 x 10 . . . . .	1
Carts, push, concrete, $\frac{1}{3}$ yard . . . . .	4
Wagons, dump . . . . .	6
Drill, steam, complete, Sergeant . . . . .	1
Hoist, steam, double, drum, Lambert No. 306 . . . . .	1
Hoist, steam, three drum, No. 3413 . . . . .	1
Engine, gas, horizontal, 10 H. P. . . . .	1
Carts, water, two-wheel, 150 gallon capacity . . . . .	7
Derrick, hand hoist . . . . .	1
Pump power, complete with spare parts . . . . .	1

*Trucks and Passenger Cars received during the Year.*

Packard 3-ton trucks . . . . .	39
Federal 3-ton trucks . . . . .	13
Pierce Arrow 2-ton trucks . . . . .	31
Pierce Arrow 5-ton trucks . . . . .	18
Nash Quads, 2-ton trucks . . . . .	10
G. M. C. $\frac{3}{4}$ -ton trucks . . . . .	5
Ford ambulances . . . . .	18
Ford touring cars . . . . .	4
Oldsmobile touring cars . . . . .	2
<hr/>	
Total . . . . .	140
Received in 1919 . . . . .	82
<hr/>	
Total received, two years . . . . .	222







Cummington bridge, near "Dudley Manor", 1920.

## BRIDGES.

The following is a detailed list of bridges built or contracted for in 1920, and a list of bridges contemplated, for which designs and plans have been prepared: —

## BRIDGES BUILT OR CONTRACTED FOR.

TOWN.	Locality.	Character of Structure.
Bernardston . . .	Over Shattuck Brook . . .	34½-foot reinforced concrete beam and slab.
	Over Couch Brook . . .	32-foot reinforced concrete beam and slab.
Billerica . . .	Over Concord River . . .	3 spans reinforced concrete arch; 2 spans of 50 feet and 1 span of 65 feet.
Cummington . . .	Over branch of Westfield River.	100-foot reinforced concrete arch.
Huntington . . .	Norwich bridge, over north branch of Westfield River.	3 spans reinforced concrete arch; 2 spans of 55 feet and 1 span of 75 feet.
Oxford . . .	Over Mannexet River . . .	15½-foot reinforced concrete arch (extension).
Saugus . . .	Over Saugus River . . .	22-foot reinforced concrete beam and slab.
Ware . . .	Over Muddy River . . .	20½-foot span reinforced concrete beam and slab.
Warwick . . .	Over Oreutt Brook . . .	36-foot reinforced concrete arch.
Williamstown . . .	Over Roaring Brook . . .	13½-foot span reinforced beam and slab.
	Over Green River . . .	39-foot reinforced beam and slab.
Woburn . . .	Over Aberjona River . . .	18-foot reinforced beam and slab.
Worthington . . .	Over Little River . . .	20-foot reinforced beam and slab.

## CONTEMPLATED BRIDGES.

TOWN.	Locality.	Character of Structure.
Amherst . . .	Over Mill River . . .	60-foot reinforced concrete arch.
Barre . . .	Over Canal . . .	14-foot 8¾-inch slab.
Becket . . .	Over west branch of Westfield River.	3 bridges, respectively, 25.4 feet, 27 feet and 26½ feet, reinforced beam and slab.
Bernardston . . .	Over Falls River . . .	60-foot reinforced concrete arch.
Brimfield . . .	Over Mill Brook . . .	17.9-foot reinforced concrete beam and slab.
Cummington . . .	Over Westfield River . . .	3 bridges; 80-foot reinforced concrete arch; 38-foot beam and slab, and 36-foot reinforced arch.
Dana . . .	Over branch of Ware River . . .	19-foot reinforced beam and slab.
Goshen . . .	Over Stones Brook . . .	30-foot reinforced concrete beam and slab.
	Over Swift River . . .	36-foot reinforced beam and slab.
Grafton . . .	Over Blackstone River . . .	70-foot reinforced concrete arch.
Holden . . .	Over Quinnapoxet River . . .	35-foot reinforced concrete beam and slab.

CONTEMPLATED BRIDGES — *Concluded.*

Town.	Locality.	Character of Structure.
Lanesborough . .	Over Town Brook . .	18-foot reinforced concrete beam and slab.
New Ashford . .	Over Thompsons Brook . .	10-foot 2½-inch reinforced slab.
	Over east branch of Green River.	24-foot beam and slab.
	Over Green River . .	28-foot beam and slab.
	Over Green River . .	16-foot beam and slab.
	Over Green River . .	16-foot beam and slab.
	Over Green River . .	16-foot beam and slab.
	Over Green River . .	23½-foot beam and slab.
Northbridge . .	Over Blackstone River . .	Reinforced concrete arch; 2 spans of 50 feet each.
Topsfield . . .	Over Ipswich River . .	32-foot stone arch, — repairs, new span-drel, walls and wings.
Westfield . . .	Frog Hole bridge, so called .	35-foot reinforced beam and slab.
Williamsburg . .	Over Meekins Brook . .	40-foot reinforced beam and slab.
	Over Mill River . . .	60-foot reinforced concrete arch.
	Over Mill River . . .	68-foot reinforced concrete arch (Hayden-ville).
Williamstown . .	Over Hemlock branch . .	34-foot beam and slab.

BRIDGE OVER THE MERRIMACK RIVER BETWEEN NEWBURYPORT  
AND SALISBURY.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 716, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for travel, of operating the draw and of maintaining the bridge shall be paid by the Commonwealth.

The expense for 1920 was \$7,957.60.

The total expense from 1912 to 1920, inclusive, was \$62,703.56.

BRIDGE OVER TAUNTON GREAT RIVER BETWEEN FALL RIVER  
AND SOMERSET.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 717, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for travel, and of operating the draw and maintaining the

bridge shall be paid by the Commonwealth; furthermore, that the expense incurred and to be incurred by the county of Bristol in restoring the bridge to a sound condition and in making it suitable for travel shall be borne by the Commonwealth.

The expense for 1920 was \$8,068.19.

The total expense from 1912 to 1920, inclusive, was \$138,709.23.



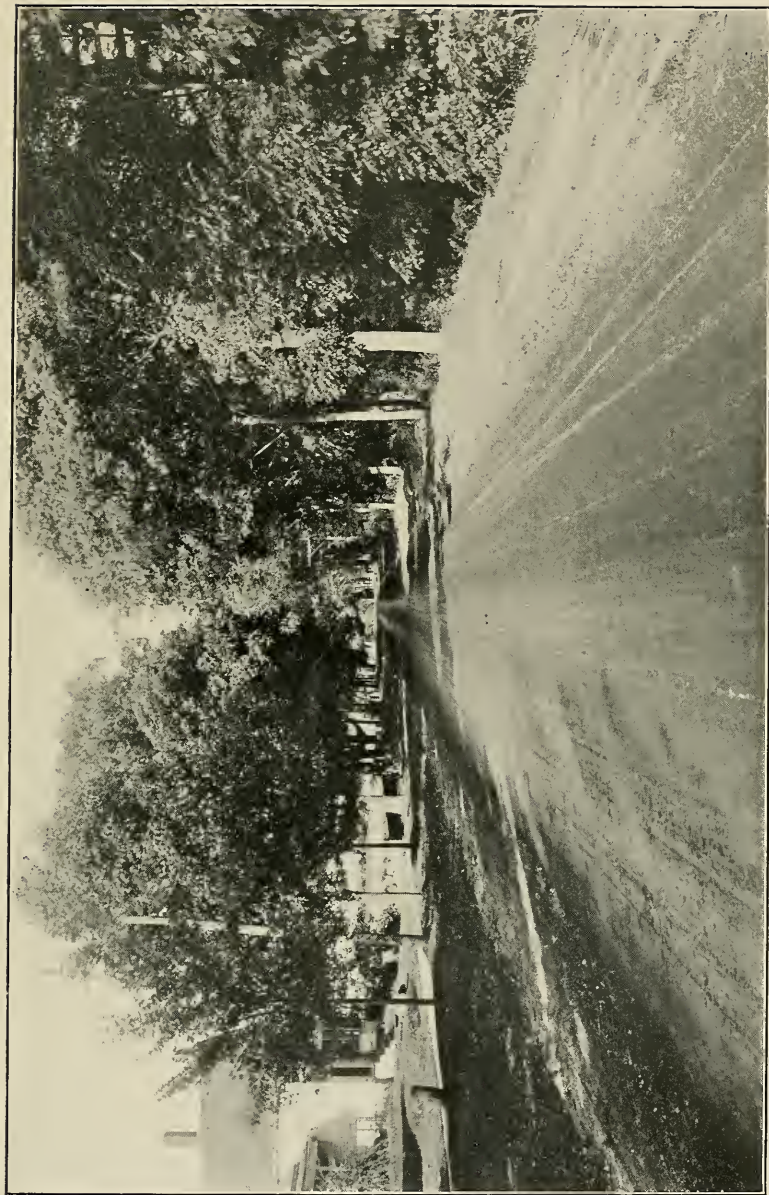
## MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS.

Chapter 525, Acts of 1910, makes available for the maintenance and improvement of town and county ways a part of the fees received from the licensing of motor vehicles, and amends section 30 of chapter 534 of the Acts of 1909 as follows:—

The fees and fines received under the provisions of this act, together with all other fees received by the commission or any other person under the laws of the commonwealth relating to the use and operation of motor vehicles, shall be paid monthly by the secretary of the commission or by the person collecting the same into the treasury of the commonwealth, and shall be used by the commission for such expenses as may be authorized by the general court to carry out the provisions of law regulating the use of motor vehicles; and the balance shall be expended, under the direction of the commission, for the maintenance of state highways without specific appropriation by the general court, in addition to all sums already or hereafter appropriated by the general court for the same purpose, and an amount not exceeding twenty per cent of said balance may be expended in any one year by said commission in repairing, improving, constructing or maintaining town or county highways which are or may be used as through routes or which connect one city or town with another and where the selectmen of the town apply, by petition in writing, to have said improvement, construction or repair made, and said commission may spend any part of said money on said work, together with any money which any town may appropriate for said purpose to be used on the same highway, and said way shall remain a town or county way. . . .

By chapter 276, General Acts of 1917, section 30, aforesaid, was further amended so that if county commissioners, as well as the selectmen of towns, apply by petition to have improvement, construction or repairs made, the Commission may expend on the work any money which a county, as well as a town, may appropriate. This chapter also provides that the provisions of section 16 of chapter 47 of the Revised Laws shall not apply to any expenditure made under authority of said section 30 out of the said fees and fines, and that the counties shall not be required to repay to the Commonwealth any part of such expenditures.





Oiled gravel surface in Medway, 1920.



During the year the Division has contracted for work to be done in the towns named in the following table which also shows the type of road, the length contracted for, and the allotments or contributions by the State, towns and counties: —

# MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS.

(Chapter 525, Acts of 1910.)

TOWN.	CONTRIBUTIONS.			Type of Road.	Length Contracted for (Feet).
	State.	Town.	County.		
Acton . . .	\$6,000 00	\$6,000 00	\$6,000 00	Bituminous macadam .	2,475
Andover . . .	18,000 00	18,000 00	18,000 00	Bituminous macadam .	7,550
Ashfield . . .	1,000 00	1,000 00	—	Gravel . . . . .	1,500
Ashland . . .	1,500 00	1,500 00	1,500 00	Water-bound macadam .	1,440
Ashland . . .	1,170 13	1,170 13	1,170 12	Bridge . . . . .	—
Äyer . . . .	12,250 00	17,250 00	12,500 00	Bituminous macadam .	5,000
Barre . . . .	2,000 00	3,000 00	—	Water-bound macadam .	2,600
Bedford . . .	500 00	500 00	500 00	Gravel . . . . .	700
Bellingham . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,500
Berkley . . .	1,000 00	1,000 00	1,000 00	Repairs and oiling . .	25,561
Bolton . . . .	2,000 00	1,000 00	2,000 00	Gravel . . . . .	2,350
Boxford . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	800
Bridgewater . .	3,000 00	3,000 00	—	Bituminous macadam .	2,275
Buckland . . .	1,000 00	1,000 00	—	Gravel . . . . .	650
Canton . . . .	20,000 00	20,000 00	20,000 00	Bituminous macadam .	5,300
Carver . . . .	4,000 00	4,000 00	4,000 00	Bituminous gravel . .	5,580
Chelmsford . .	12,000 00	12,000 00	12,000 00	Bituminous macadam .	6,300
Concord . . . .	3,000 00	13,000 00	3,000 00	Bituminous macadam .	3,400
Dana . . . . .	600 00	200 00	600 00	Bridge and gravel road .	50
Danvers . . . .	4,250 00	4,250 00	4,250 00	Bituminous macadam .	1,550
Dartmouth . . .	5,000 00	5,000 00	—	Bituminous macadam .	4,235
Dennis . . . .	3,000 00	3,000 00	—	Repairs and oiling . .	34,320
Dighton . . . .	3,000 00	3,000 00	—	Water-bound macadam .	2,200
Dracut . . . .	2,000 00	2,000 00	2,000 00	Bituminous macadam .	500
Dudley . . . .	29,055 00	8,500 00	12,500 00	Cement concrete . . .	7,174
Dunstable . . .	1,750 00	1,750 00	1,750 00	Repairs and oiling . .	29,000
Duxbury . . .	10,000 00	30,000 00	—	Sand and asphalt . . .	14,520
Easthampton . .	2,000 00	2,000 00	—	Gravel . . . . .	3,500
East Bridgewater .	5,000 00	5,000 00	—	Bituminous gravel . .	2,317
East Longmeadow .	3,500 00	7,300 00	—	Gravel . . . . .	3,000
Essex . . . . .	8,000 00	8,000 00	8,000 00	Bituminous macadam .	2,095

MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS—  
*Continued.*

TOWN.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
Framingham . . .	\$2,000 00	\$2,000 00	\$2,000 00	Gravel . . . . .	2,000
Framingham . . .	3,200 00	3,200 00	3,200 00	Bituminous macadam . .	1,618
Franklin . . . .	4,000 00	4,000 00	4,000 00	Gravel . . . . .	3,200
Freetown . . . .	3,000 00	3,000 00	—	Water-bound macadam . .	2,560
Freetown . . . .	2,500 00	2,500 00	2,500 00	Water-bound macadam . .	2,058
Georgetown . . .	2,500 00	2,500 00	2,500 00	Gravel . . . . .	3,400
Groveland . . . .	2,500 00	2,500 00	2,500 00	Gravel . . . . .	12,740
Hadley . . . . .	5,000 00	5,000 00	—	Water-bound macadam . .	2,750
Halifax . . . . .	3,600 00	4,800 00	3,600 00	Bituminous gravel . . .	4,281
Hanson . . . . .	2,250 00	2,250 00	—	Water-bound macadam . .	2,487
Harvard . . . . .	4,300 00	4,300 00	4,300 00	Gravel . . . . .	4,000
Hatfield . . . . .	5,000 00	5,000 00	—	Bituminous macadam . .	2,200
Holbrook . . . .	6,000 00	6,000 00	6,000 00	Bituminous gravel . . .	3,355
Holliston . . . .	2,500 00	2,500 00	2,500 00	Bituminous macadam . .	1,810
Hopkinton . . . .	3,000 00	3,000 00	3,000 00	Water-bound macadam . .	1,700
Hudson . . . . .	3,000 00	3,000 00	3,000 00	Gravel . . . . .	3,450
Ipswich . . . . .	400 00	400 00	400 00	Repairs . . . . .	8,950
Kingston . . . .	37,000 00	12,500 00	12,500 00	Bituminous macadam . .	8,454
Leicester . . . .	8,000 00	8,000 00	8,000 00	Bituminous macadam . .	4,613
Lexington . . . .	10,500 00	10,500 00	10,500 00	Bituminous macadam . .	3,793
Lincoln . . . . .	9,000 00	9,000 00	9,000 00	Bituminous macadam . .	3,550
Littleton . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,100
Littleton . . . .	1,000 00	1,000 00	1,000 00	Repairs . . . . .	20,000
Lynnfield . . . .	7,500 00	7,500 00	7,500 00	Bituminous macadam . .	2,800
Maynard . . . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	2,500
Medfield . . . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	1,800
Medway . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	2,500
Millbury . . . . .	4,666 67	9,333 33	—	{ Cement concrete . . .	800
				{ Bituminous macadam . .	560
Millis . . . . .	2,000 00	3,000 00	2,000 00	Gravel . . . . .	3,500
Montague . . . .	500 00	500 00	—	Repairs and oiling . . .	5,730
Montague . . . .	5,000 00	5,000 00	—	Gravel . . . . .	4,000
Norfolk . . . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	5,700
North Brookfield .	5,000 00	5,000 00	5,000 00	Bituminous macadam . .	2,550
North Reading . .	900 00	900 00	900 00	Repairs and oiling . . .	40,878

MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS —  
*Continued.*

TOWN.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
North Reading . . .	\$300 00	\$300 00	\$300 00	Water-bound macadam .	250
Norwood . . . . .	3,804 64	7,609 29	3,804 64	Bituminous macadam .	3,390
Oxford . . . . .	4,300 00	3,650 00	3,650 00	Bituminous macadam .	3,105
Paxton . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	3,225
Pembroke . . . . .	8,000 00	8,000 00	8,000 00	Bituminous gravel . . .	7,050
Pepperell . . . . .	700 00	700 00	700 00	Gravel . . . . .	950
Petersham . . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	2,700
Plympton . . . . .	8,000 00	8,000 00	8,000 00	Bituminous gravel . . .	6,353
Plympton . . . . .	500 00	500 00	500 00	Gravel . . . . .	574
Princeton . . . . .	14,322 00	10,741 00	7,161 00	Bituminous macadam .	5,980
Randolph . . . . .	10,000 00	10,000 00	10,000 00	Cement concrete . . .	2,000
Reading . . . . .	1,300 00	1,300 00	1,300 00	Bituminous macadam .	650
Rehoboth . . . . .	1,500 00	1,500 00	—	Gravel . . . . .	2,025
Richmond . . . . .	2,500 00	1,500 00	—	Gravel . . . . .	1,600
Rowley . . . . .	500 00	500 00	500 00	Gravel . . . . .	900
Salisbury . . . . .	18,000 00	18,000 00	18,000 00	Bituminous concrete .	10,450
Sandwich . . . . .	1,000 00	—	—	Repairs and oiling . .	14,500
Saugus . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	1,600
				Repairs and oiling . .	10,400
Sharon . . . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam .	2,518
Sheffield . . . . .	1,000 00	1,000 00	—	Repairs and oiling . .	15,000
Sherborn . . . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	1,400
Shrewsbury . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	1,950
Sterling . . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	2,100
Stoneham . . . . .	1,000 00	1,000 00	1,000 00	Bituminous macadam .	650
Stow . . . . .	1,500 00	1,500 00	1,500 00	Water-bound macadam .	1,000
Stow . . . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	2,500
Sudbury . . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	2,100
Tisbury . . . . .	8,000 00	—	—	Sand and asphalt . . .	119
Tyngsborough . . . . .	500 00	500 00	500 00	Gravel . . . . .	900
Tyngsborough . . . . .	300 00	200 00	300 00	Repairs . . . . .	7,400
Wakefield . . . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam .	1,450
Wareham-Bourne . . . . .	20,000 00	—	190,000 00	Bridge over Cohasset Nar- rows.	—
Wareham-Bourne . . . . .	40,000 00	—	—	Bituminous macadam ap- proaches to bridge.	1,693
Washington . . . . .	1,000 00	—	—	Water-bound macadam .	2,300



MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS —  
*Concluded.*

TOWN.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
Wayland . . .	\$2,500 00	\$2,500 00	\$2,500 00	Bituminous macadam . .	584
Wayland . . .	2,550 00	5,405 00	2,550 00	Repairs and oiling . .	50,688
West Bridgewater . .	3,000 00	3,000 00	—	Bituminous gravel . .	1,600
Westfield . . .	50,000 00	50,000 00	50,000 00	Bituminous macadam . .	26,055
Westport . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam . .	4,700
West Springfield . .	10,000 00	20,000 00	—	Cement concrete . .	2,500
Westwood . . .	4,000 00	8,000 00	4,000 00	Bituminous macadam . .	3,050
Weymouth . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam . .	2,790
Wilbraham . . .	1,800 00	1,800 00	—	Grading . . . .	1,700
Wrentham . . .	150 00	150 00	—	Grading . . . .	200

The expenditures during the year in various counties for the maintenance and improvement of town and county ways, under chapter 525, Acts of 1910, were: —

COUNTY.	Amount.
Barnstable . . . . .	\$6,641 93
Berkshire . . . . .	31,557 36
Bristol . . . . .	32,942 56
Essex . . . . .	96,845 45
Franklin . . . . .	10,518 99
Hampden . . . . .	14,332 90
Hampshire . . . . .	9,314 97
Middlesex . . . . .	92,469 86
Norfolk . . . . .	61,561 66
Plymouth . . . . .	65,629 69
Worcester . . . . .	96,581 10

Details of the foregoing expenditures follow: —



*Barnstable County.*

Bourne . . . . .	\$5,469 75
Dennis . . . . .	9 23
Harwich . . . . .	300 00
Provincetown . . . . .	218 79
Sandwich . . . . .	644 16

*Berkshire County.*

Cheshire . . . . .	13,092 41
Egremont . . . . .	711 76
Florida . . . . .	1,000 00
Hancock . . . . .	7,485 86
Lanesborough . . . . .	1,985 80
New Ashford . . . . .	1,171 65
Richmond . . . . .	5,339 04
Williamstown . . . . .	770 84

*Bristol County.*

Berkley . . . . .	979 04
Dartmouth . . . . .	8,925 84
Dighton . . . . .	3,000 00
Freetown . . . . .	10,500 00
Raynham . . . . .	1,500 00
Rehoboth . . . . .	1,243 77
Somerset . . . . .	2,236 58
Swansea . . . . .	1,557 33
Westport . . . . .	3,000 00

*Essex County.*

Andover . . . . .	34,398 75
Boxford . . . . .	1,500 00
Danvers . . . . .	8,154 96
Essex . . . . .	1,300 00
Georgetown . . . . .	3,207 17
Groveland . . . . .	2,230 00
Ipswich . . . . .	3,685 16
Lynnfield . . . . .	7,721 75
Middleton . . . . .	10,117 25
Newbury . . . . .	4,152 10
North Andover . . . . .	2,135 72
Rowley . . . . .	5,296 32
Saugus . . . . .	8,009 27
Topsfield . . . . .	4,937 00

*Franklin County.*

Ashfield . . . . .	\$1,000 00
Buckland . . . . .	1,000 00
Montague . . . . .	5,565 33
New Salem . . . . .	2,953 66

*Hampden County.*

Agawam . . . . .	9,594 92
Brimfield . . . . .	363 77
East Longmeadow . . . . .	1,500 00
Monson . . . . .	226 00
West Springfield . . . . .	2,648 21

*Hampshire County.*

Hadley . . . . .	7,184 02
Pelham . . . . .	516 00
Williamsburg . . . . .	1,614 95

*Middlesex County.*

Acton . . . . .	5,201 99
Ashby . . . . .	85
Ashland . . . . .	2,057 62
Ayer . . . . .	12,072 71
Bedford . . . . .	733 33
Chelmsford . . . . .	14,458 33
Concord . . . . .	3,857 15
Dracut . . . . .	3,600 00
Dunstable . . . . .	1,500 00
Framingham . . . . .	4,283 01
Holliston . . . . .	2,149 34
Hopkinton . . . . .	3,000 00
Hudson . . . . .	511 27
Lexington . . . . .	5,000 00
Lincoln . . . . .	10,178 00
Littleton . . . . .	1,287 90
Maynard . . . . .	1,475 08
North Reading . . . . .	1,200 00
Pepperell . . . . .	644 89
Reading . . . . .	1,045 47
Sherborn . . . . .	2,975 00
Shirley . . . . .	204 20
Stoneham . . . . .	1,400 00
Stow . . . . .	1,732 70
Sudbury . . . . .	3,002 48
Tewksbury . . . . .	1,202 88

Tyngsborough . . . . .	\$722 45
Wakefield . . . . .	2,992 97
Wayland . . . . .	3,980 24

*Norfolk County.*

Bellingham . . . . .	1,000 00
Canton . . . . .	15,590 00
Franklin . . . . .	3,992 42
Holbrook . . . . .	7,996 96
Medway . . . . .	502 58
Millis . . . . .	1,000 00
Norfolk . . . . .	1,410 00
Norwood . . . . .	3,804 64
Randolph . . . . .	13,221 43
Sharon . . . . .	1,958 36
Walpole . . . . .	1,428 50
Westwood . . . . .	4,233 20
Weymouth . . . . .	3,972 00
Wrentham . . . . .	1,451 57

*Plymouth County.*

Bridgewater . . . . .	2,995 77
Carver . . . . .	4,436 11
East Bridgewater . . . . .	9,615 64
Halifax . . . . .	60 00
Hanson . . . . .	3,792 90
Kingston . . . . .	9,981 87
Lakeville . . . . .	9,256 24
Pembroke . . . . .	11,923 33
Plympton . . . . .	9,947 58
Wareham . . . . .	2,945 25
West Bridgewater . . . . .	675 00

*Worcester County.*

Barre . . . . .	1,990 12
Berlin . . . . .	1,500 00
Bolton . . . . .	1,560 00
Brookfield . . . . .	924 94
Dana . . . . .	600 00
Dudley . . . . .	41,437 96
Hardwick . . . . .	1,500 00
Harvard . . . . .	3,777 81
Holden . . . . .	282 25
Leicester . . . . .	6,720 00
Millbury . . . . .	3,783 35
North Brookfield . . . . .	3,000 00

Oxford . . . . .	\$439 37
Paxton . . . . .	7,075 76
Petersham . . . . .	1 40
Princeton . . . . .	180 59
Shrewsbury . . . . .	4,333 33
Southbridge . . . . .	13,878 09
Sturbridge . . . . .	3,265 00
Westborough . . . . .	331 13
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Total . . . . .	\$518,396 47

## HIGHWAYS IN THE FIVE WESTERN COUNTIES.

Chapter 221, General Acts of 1915, provided for the construction and completion, during 1915, 1916, 1917 and 1918, of about 163 miles of highway on 17 different specified routes located in 38 towns and 1 city in the five western counties of the Commonwealth, namely, Berkshire, Franklin, Hampden, Hampshire and Worcester; for the county commissioners of the county in which the road was located to lay out the highway according to plans prepared by the Massachusetts Highway Commission; for payment by the county of land and grade damages; for the issue of \$2,000,000 bonds to be used for the construction of these highways, and for the repayment to the Commonwealth, by the counties in which any of the highways were constructed, of 25 per cent of the expenditures in that county.

Chapter 572, Acts of 1920, in addition to authorizing the Division to expend an additional sum of \$1,000,000 before Nov. 30, 1924, for the purpose of completing the construction of certain highways in the five western counties of the State, under the provisions of chapter 221 of the General Acts of 1915, provides that one-fourth of any money which may be expended under the provisions of section 1 thereof for a highway in any county shall be repaid by the county to the Commonwealth in such instalments and at such times, within six years thereafter, as the Division, with the approval of the Auditor of the Commonwealth, shall determine; also that a sum equal to the money so repaid shall before Nov. 30, 1926, be expended by the Division without specific appropriation, either in completing the highways mentioned in said chapter 221, or in improving a highway in any town in the five western counties that is not situated upon one of the highways mentioned in said act, provided that the valuation of the town does not exceed \$1,000,000, the highway so improved to be a main highway connecting such town with its railroad station, with a main through highway, or with an adjoining city or town.

The total expenditures during the year for the construction of highways in Sheffield and Great Barrington; Dalton, Windsor and Goshen; Washington and Hinsdale; Huntington and Worthington; Peru; Belchertown and Ware; Agawam and Southwick; Ashfield and Goshen; Gill; Orange and Warwick; Wales; Chesterfield, Northampton and Williamsburg were \$212,443.77, details of which follow:—

*Route No. 1.*

Sheffield . . . . .	\$260 93
Great Barrington . . . . .	12 15

*Route No. 2.*

Dalton . . . . .	10 11
Windsor . . . . .	31 72
Goshen . . . . .	1,230 99

*Route No. 4.*

Washington . . . . .	18,614 48
Hinsdale . . . . .	35,751 79

*Route No. 5.*

Huntington . . . . .	136 00
Worthington . . . . .	42,211 98

*Route No. 6.*

Peru . . . . .	4,762 32
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*Route No. 8.*

Belchertown . . . . .	19,070 69
Ware . . . . .	120 14

*Route No. 9.*

Agawam . . . . .	73 56
Southwick . . . . .	50,355 28

*Route No. 10.*

Ashfield . . . . .	4,153 34
Goshen . . . . .	3 00

*Route No. 11.*

Gill . . . . .	13,438 39
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*Route No. 14.*

Orange . . . . .	\$10 21
Warwick . . . . .	14,630 85

*Route No. 16.*

Wales . . . . .	3,958 36
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*Route No. 17.*

Chesterfield . . . . .	3,283 09
Northampton . . . . .	20 62
Williamsburg . . . . .	303 77
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Total . . . . .	\$212,443 77

## CONSTRUCTION AND REPAIR OF WAYS IN CERTAIN TOWNS.

Chapter 344, General Acts of 1917, Part 1, section 23, provides that —

The Massachusetts highway commission shall allot for and expend in such towns the valuation of which does not exceed one million dollars, and in such amounts as it determines, five per cent of the amount appropriated each year for the construction of state highways, to be used in constructing and repairing ways in such towns; and it shall not be a condition precedent that such towns shall make any appropriation or contribution in excess of the usual annual appropriations for highway purposes to become eligible for an expenditure under this section. Said commission may also allot for and expend in such towns for like purposes, in addition to any expenditure hereinbefore provided for, a further amount of five per cent of said amount appropriated, if such towns appropriate or contribute, to be expended under the provisions of this section, an amount equal to the amount allotted by the commission. Said commission may also allot and expend a further amount of not more than five per cent of said amount appropriated each year for the construction of state highways in towns the valuation of which exceeds one million dollars, in such amounts as it determines, if such towns appropriate or contribute, to be expended under the provisions of this section, an amount, in addition to the average annual appropriations for repairs of highways in such towns for the preceding five years, exclusive of appropriations or contributions under this section, equal to the amount allotted by said commission. No town the valuation of which is less than one million dollars, and which makes no appropriation or contribution under the provisions of this section, shall receive in any one year more than forty per cent of its average annual appropriations for highway purposes for the preceding five years: provided, however, that said commission may allot in any year a sum not exceeding four hundred dollars to any such town, the said average annual appropriation of which does not exceed one thousand dollars. Such allotments and expenditures shall be made only upon the petition of the selectmen of the towns, and the provisions of section thirteen of Part 1 of this act shall apply thereto, but a way constructed or repaired under the provisions of this section shall not thereby become a state highway.

During the year the Division has contracted for work to be done in the towns named in the following table which also shows the type of road, the length contracted for, and the allotments or contributions by the State, towns and counties: —

## CONSTRUCTION AND REPAIR OF WAYS IN CERTAIN TOWNS.

(Chapter 344, General Acts of 1917, Part 1, section 23.)

TOWN.	CONTRIBUTIONS.			Type of Road.	Length con- tracted for (Feet).
	State.	Town.	County.		
Agawam . . . . .	\$10,000	\$10,000	—	Bituminous macadam . . . . .	3,700
Blandford . . . . .	1,250	1,250	—	Water-bound macadam . . . . .	1,700
Boxborough . . . . .	600	600	—	Gravel . . . . .	600
Chester . . . . .	1,000	1,000	—	Gravel . . . . .	1,788
Colrain . . . . .	1,600	1,600	—	Gravel . . . . .	2,000
Dana . . . . .	1,000	1,000	\$1,000	Gravel . . . . .	1,750
Falmouth . . . . .	10,000	10,000	—	Sand and asphalt . . . . .	8,460
Gardner . . . . .	2,500	2,500	—	Gravel . . . . .	2,350
Granby . . . . .	1,000	1,000	—	Gravel . . . . .	600
Lakeville . . . . .	3,500	3,500	—	Bituminous macadam . . . . .	2,430
Ludlow . . . . .	750	1,500	—	Gravel . . . . .	700
Mendon . . . . .	500	500	—	Gravel . . . . .	700
Monson . . . . .	2,500	2,500	—	Gravel . . . . .	1,300
Nantucket . . . . .	15,000	15,000	—	Sand and oil . . . . .	13,214
New Marlborough . . . . .	1,500	1,500	—	Gravel . . . . .	3,950
Orange . . . . .	1,000	1,000	—	Gravel . . . . .	1,700
Palmer . . . . .	30,000	30,000	—	Cement concrete . . . . .	4,211
Prescott . . . . .	1,000	1,000	—	Gravel road and two bridges reconstructed.	250
Raynham . . . . .	2,000	2,000	—	Water-bound macadam . . . . .	1,390
Shutesbury . . . . .	200	200	—	Gravel . . . . .	400
Southwick . . . . .	500	500	—	Gravel . . . . .	900
Tyringham . . . . .	1,000	1,000	1,000	Water-bound macadam . . . . .	1,400
Wilbraham . . . . .	5,000	5,000	—	Bituminous macadam . . . . .	2,350

The total expenditures during the year in various towns in Barnstable, Berkshire, Bristol, Franklin, Hampshire, Middlesex, Nantucket, Plymouth and Worcester counties were \$65,475.47. Details of the foregoing expenditures follow:—

*Barnstable County.*

Falmouth . . . . . \$14,500 00

*Berkshire County.*

Florida . . . . . 450 00  
Hinsdale . . . . . 103 76

New Marlborough . . . . .	\$2,931 90
Tyringham . . . . .	900 00
Williamstown . . . . .	21,194 67

*Bristol County.*

Raynham . . . . .	2,000 00
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*Franklin County.*

Orange . . . . .	1,000 00
Shutesbury . . . . .	200 00
Wendell . . . . .	600 00

*Hampshire County.*

Prescott . . . . .	1,225 00
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*Middlesex County.*

Boxborough . . . . .	600 00
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*Nantucket County.*

Nantucket . . . . .	13,250 00
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*Plymouth County.*

Bridgewater . . . . .	1,462 25
Lakeville . . . . .	3,500 00

*Worcester County.*

Dana . . . . .	1,000 00
Mendon . . . . .	500 00
Oakham . . . . .	57 89

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Total . . . . .	\$65,475 47
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REPAIR AND IMPROVEMENT OF PUBLIC WAYS, EXCLUSIVE  
OF STATE HIGHWAYS, IN CERTAIN TOWNS.

Chapter 155, General Acts of 1918, provides:—

SECTION 1. There may be expended from the treasury of the commonwealth for the repair and improvement of public ways, exclusive of state highways, in towns the valuation of which, determined as provided in section four, is less than three million dollars and in which the amount of such valuation, divided by the number of miles of such public ways, hereinafter referred to as the road mileage valuation, is less than fifty thousand dollars, such sums, not exceeding fifty dollars per mile, as the general court may from time to time appropriate therefor: provided, however, that such towns shall contribute or make available for use in connection therewith the following graded amounts for each and every mile of said public ways within their respective limits:—

Towns having a road mileage valuation of less than five thousand dollars, twelve dollars and fifty cents.

Towns having a road mileage valuation of five thousand dollars and less than seven thousand five hundred dollars, fifteen dollars.

Towns having a road mileage valuation of seven thousand five hundred dollars and less than ten thousand dollars, twenty-five dollars.

Towns having a road mileage valuation of ten thousand dollars and less than fifteen thousand dollars, forty dollars.

Towns having a road mileage valuation of fifteen thousand dollars and less than twenty thousand dollars, fifty dollars.

Towns having a road mileage valuation of twenty thousand dollars and less than thirty thousand dollars, seventy-five dollars.

Towns having a road mileage valuation of thirty thousand dollars and less than forty thousand dollars, one hundred dollars.

Towns having a road mileage valuation of forty thousand dollars and less than fifty thousand dollars, one hundred and twenty-five dollars.

The amounts appropriated as aforesaid and contributed by the towns shall be expended under the direction of the Massachusetts highway commission on such ways as the commission and the selectmen of the towns may from time to time agree upon.

SECTION 2. The said expenditures shall be made only upon the written petition of the selectmen of the towns, containing such information as the said commission may require. No work shall be done under this act in any district where dwelling houses or structures devoted to business are situated at intervals averaging less than two hundred feet for the distance of a quarter of a mile.

SECTION 3. The said towns may contract with the said commission for the performance of the work authorized hereby; or, if the right to do so is

waived by the selectmen, the commission may have the work done by such persons and in such manner as it may determine, in which event the towns shall pay their proportionate part of the expense when and as ordered by said commission. The cost of any materials, machinery or tools purchased by the commission for or on account of the work in any particular town shall be considered as a part of the expenditures in such town under this act; and such machinery or tools shall be the property of the commonwealth.

SECTION 4. Said commission shall from time to time determine, as nearly as possible, the number of miles of such public ways, in towns the valuation of which is less than three million dollars, and shall inform the selectmen of such towns of the contributions required under this act, the valuation of each town to be determined by the apportionments made for the collection of state and county taxes. . . .

During the year the Division has contracted for work to be done in the towns named in the following table which also shows the allotments or contributions by the State and towns: —

TOWN.	ALLOTMENTS.	
	State.	Town.
Acton . . . . .	\$3,000	\$6,800
Alford . . . . .	1,000	800
Ashburnham . . . . .	3,000	4,760
Ashby . . . . .	3,000	2,670
Ashfield . . . . .	3,000	4,000
Becket . . . . .	2,900	3,000
Belchertown . . . . .	3,000	5,440
Bellingham . . . . .	2,050	4,100
Berlin . . . . .	1,850	2,700
Blandford . . . . .	3,000	2,750
Bolton . . . . .	2,750	3,500
Boxborough . . . . .	1,300	1,050
Boxford . . . . .	2,500	4,000
Boylston . . . . .	1,600	1,600
Brimfield . . . . .	3,000	2,560
Carlisle . . . . .	3,000	1,500
Charlemont . . . . .	2,500	2,000
Charlton . . . . .	3,000	4,800
Chester . . . . .	3,000	3,550
Chesterfield . . . . .	2,600	1,300



TOWN.	ALLOTMENTS.	
	State.	Town.
Colrain . . . . .	\$3,000	\$3,600
Conway . . . . .	3,000	2,960
Cummington . . . . .	2,950	2,000
Dana . . . . .	2,500	1,250
Douglas . . . . .	3,000	5,475
Dunstable . . . . .	1,750	1,400
Eastham . . . . .	1,950	1,560
Enfield . . . . .	1,850	2,500
Florida . . . . .	2,050	3,075
Gill . . . . .	1,800	1,800
Goshen . . . . .	1,550	800
Granby . . . . .	2,300	2,500
Granville . . . . .	3,000	2,500
Greenwich . . . . .	1,950	1,500
Hampden . . . . .	1,700	1,360
Hancock . . . . .	1,450	2,000
Harvard . . . . .	3,000	6,390
Hawley . . . . .	2,450	1,000
Heath . . . . .	2,600	1,400
Hinsdale . . . . .	1,650	2,500
Holland . . . . .	1,500	375
Hopkinton . . . . .	3,000	5,175
Hubbardston . . . . .	3,000	3,500
Huntington . . . . .	2,050	3,200
Leverett . . . . .	1,900	2,000
Leyden . . . . .	2,050	1,000
Littleton . . . . .	1,850	3,700
Medway . . . . .	2,000	5,000
Mendon . . . . .	2,150	2,150
Middlefield . . . . .	1,800	700
Monson . . . . .	3,000	6,300
Monterey . . . . .	2,500	1,250
Montgomery . . . . .	1,600	800
New Braintree . . . . .	2,750	1,375
New Marlborough . . . . .	3,000	4,780
New Salem . . . . .	3,000	1,500
Northfield . . . . .	3,000	5,325
Norton . . . . .	2,850	5,700

TOWN.	ALLOTMENTS.	
	State.	Town.
Oakham . . . . .	\$2,350	\$1,700
Otis . . . . .	2,950	1,400
Paxton . . . . .	1,650	1,320
Pelham . . . . .	2,000	1,650
Peru . . . . .	2,250	900
Phillipston . . . . .	2,050	1,100
Plainfield . . . . .	2,400	1,300
Plympton . . . . .	1,700	1,800
Prescott . . . . .	1,950	800
Princeton . . . . .	3,000	5,000
Raynham . . . . .	2,200	3,300
Rehoboth . . . . .	3,000	4,040
Rowe, . . . . .	2,050	1,600
Royalston . . . . .	3,000	3,900
Rutland . . . . .	3,000	3,640
Sandisfield . . . . .	3,000	3,000
Savoy . . . . .	2,800	700
Sherborn . . . . .	2,500	8,500
Shutesbury . . . . .	2,000	1,000
Southampton . . . . .	3,000	2,440
Southwick . . . . .	2,850	6,500
Sterling . . . . .	3,000	5,000
Stow . . . . .	2,250	3,375
Sturbridge . . . . .	3,000	3,520
Sunderland . . . . .	1,750	2,625
Sutton . . . . .	3,000	4,500
Templeton . . . . .	3,000	8,300
Tolland . . . . .	2,100	1,200
Townsend . . . . .	3,000	3,800
Tyringham . . . . .	1,150	1,150
Warwick . . . . .	2,750	2,750
Washington . . . . .	2,550	1,000
Wendell . . . . .	2,350	2,400
Westhampton . . . . .	2,100	1,000
Westminster . . . . .	3,000	3,440
Whately . . . . .	1,950	3,000
Williamsburg . . . . .	2,100	4,200
Windsor . . . . .	3,000	825
Worthington . . . . .	3,000	2,500

The expenditures during 1920, in various counties, for the repair and improvement of public ways, exclusive of State highways, under chapter 155, General Acts of 1918, were:—

COUNTY.	Amount.
Barnstable . . . . .	\$1,768 69
Berkshire . . . . .	32,108 00
Bristol . . . . .	8,371 59
Essex . . . . .	2,500 00
Franklin . . . . .	43,568 02
Hampden . . . . .	24,677 34
Hampshire . . . . .	35,912 24
Middlesex . . . . .	22,037 12
Norfolk . . . . .	3,950 00
Plymouth . . . . .	1,700 00
Worcester . . . . .	53,357 57

Details of the foregoing expenditures follow:—

*Barnstable County.*

Eastham . . . . . \$1,768 69

*Berkshire County.*

Alford . . . . . 1,040 76  
 Becket . . . . . 2,147 99  
 Florida . . . . . 2,325 38  
 Hancock . . . . . 2,207 56  
 Hinsdale . . . . . 1,409 07  
 Monterey . . . . . 1,548 88  
 New Marlborough . . . . . 2,650 00  
 Otis . . . . . 3,366 00  
 Peru . . . . . 2,167 84  
 Sandisfield . . . . . 2,792 84  
 Savoy . . . . . 2,798 26  
 Tyringham . . . . . 1,150 00  
 Washington . . . . . 2,421 01  
 West Stockbridge . . . . . 1,031 08  
 Windsor . . . . . 3,045 33

*Bristol County.*

Norton . . . . .	\$5,350 00
Raynham . . . . .	521 59
Rehoboth . . . . .	2,500 00

*Essex County.*

Boxford . . . . .	2,500 00
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*Franklin County.<sup>1</sup>*

Ashfield . . . . .	3,182 97
Charlemont . . . . .	2,517 12
Colrain . . . . .	3,088 10
Conway . . . . .	2,738 87
Gill . . . . .	1,879 90
Hawley . . . . .	2,456 11
Heath . . . . .	2,050 00
Leverett . . . . .	3,675 00
Leyden . . . . .	2,169 51
Monroe . . . . .	669 16
New Salem . . . . .	3,205 52
Northfield . . . . .	2,900 00
Rowe . . . . .	2,224 16
Shutesbury . . . . .	2,142 11
Sunderland . . . . .	1,300 00
Warwick . . . . .	2,742 65
Wendell . . . . .	2,676 84
Whately . . . . .	1,950 00

*Hampden County.*

Blandford . . . . .	2,692 20
Brimfield . . . . .	2,834 15
Chester . . . . .	2,628 88
Granville . . . . .	3,179 01
Hampden . . . . .	1,747 13
Holland . . . . .	1,658 55
Monson . . . . .	2,950 00
Montgomery . . . . .	2,181 61
Southwick . . . . .	3,166 17
Tolland . . . . .	1,639 64

*Hampshire County.*

Belchertown . . . . .	3,082 40
Chesterfield . . . . .	2,856 08
Cummington . . . . .	2,150 00

Enfield . . . . .	\$2,274 55
Goshen . . . . .	1,436 01
Granby . . . . .	2,060 70
Greenwich . . . . .	2,300 96
Hatfield . . . . .	436 78
Huntington . . . . .	1,450 50
Middlefield . . . . .	1,879 68
Pelham . . . . .	2,316 35
Plainfield . . . . .	2,654 96
Prescott . . . . .	2,377 25
Southampton . . . . .	3,097 59
Westhampton . . . . .	1,005 41
Williamsburg . . . . .	1,983 02
Worthington . . . . .	2,550 00

*Middlesex County.*

Acton . . . . .	2,825 00
Ashby . . . . .	2,775 00
Boxborough . . . . .	1,050 00
Carlisle . . . . .	2,999 62
Dunstable . . . . .	1,750 00
Hopkinton . . . . .	1,850 00
Littleton . . . . .	1,400 00
Sherborn . . . . .	2,475 00
Stow . . . . .	2,212 50
Townsend . . . . .	2,700 00

*Norfolk County.*

Bellingham . . . . .	1,950 00
Medway . . . . .	2,000 00

*Plymouth County.*

Plympton . . . . .	1,700 00
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*Worcester County.*

Ashburnham . . . . .	2,800 00
Berlin . . . . .	1,849 32
Bolton . . . . .	2,682 50
Boylston . . . . .	1,532 50
Charlton . . . . .	2,437 58
Dana . . . . .	2,500 00
Douglas . . . . .	3,000 00
Harvard . . . . .	2,475 00
Hubbardston . . . . .	2,952 83
Mendon . . . . .	2,000 00





## KEEPING CERTAIN HIGHWAYS OPEN DURING THE WINTER MONTHS.

Chapter 488 of the Acts of 1920, approved May 19, 1920, provides: —

That the Department of Public Works may co-operate with city and town authorities in keeping certain highways open and reasonably passable for vehicles during the winter months, and for this purpose may accept financial or other assistance from individuals, partnerships or corporations.

That the co-operation of the Commonwealth shall consist in furnishing such equipment as the Department deems suitable, and the supervision of the use of the same.

That the highways to be kept open and passable under this act shall be selected by said Department with regard to their importance for commercial uses and with regard to the co-operation and aid to be rendered by cities and towns, individuals, partnerships and corporations in carrying on the work, but no highway shall be selected therefor without the approval of the municipal authorities.

That work carried on under this act shall be supplemental to work undertaken and performed by cities and towns under existing laws.

That nothing in this act shall render the Commonwealth liable to pay any damages which it is not liable to pay under existing laws, nor shall this act in any way relieve cities and towns from keeping their highways clear from ice and snow as required by existing laws.

That for the purposes of this act said Department may expend during 1920 and 1921 from such sums as may hereafter be appropriated by the General Court a sum not exceeding \$50,000.

Up to Dec. 1, 1920, sixty-two snow plows were purchased by the Division, and 12,600 feet of snow fence made, delivered and set up. The fence was distributed as follows: —

	Feet.
Pittsfield-Lenox . . . . .	600
Pittsfield-New York line . . . . .	600
Northampton-Greenfield . . . . .	1,260
Westfield-Woronoco . . . . .	660
Boston-Springfield . . . . .	8,820
Reading-Stoneham . . . . .	660
Total . . . . .	12,600

Snow plows were distributed as follows: —

Youlden, Smith & Hopkins of Boston . . . . .	5
Lowell Bleachery of Lowell . . . . .	1
Massachusetts Department of Public Works, Division of Highways	3
Strathmore Paper Company of West Springfield . . . . .	1
	<hr/>
Total . . . . .	10

Arrangements were also made to furnish plows, as follows: —

Springfield Republican . . . . .	2
Allen Manufacturing Company of Barre . . . . .	2
Ketchen Milk Company of Belchertown . . . . .	1
Spencer Bus Line . . . . .	2
Worcester City Truck Company . . . . .	2
City of Peabody . . . . .	1
	<hr/>
Total . . . . .	10

These ten plows have been approved for use on the following main line of highways: —

Barre—Worcester.  
 Belchertown—Holyoke.  
 Boston—Ayer.  
 Boston—Lawrence—Lowell—Haverhill.  
 Peabody—Lynn.  
 Westfield—Springfield—Worcester.

The total expenditure to Dec. 1, 1920, was \$18,923.

## THE REGULATION OF ADVERTISING SIGNS AND DEVICES WITHIN THE PUBLIC VIEW.

Chapter 545 of the Acts of 1920, approved May 27, 1920, provides: —

SECTION 1. The division of highways of the department of public works, hereinafter called the division, shall, within sixty days after the passage of this act, make rules and regulations for the proper control and restriction of billboard and other advertising devices on public ways or on private property within public view of any highway, public park or reservation, and the division may, from time to time, amend, repeal or add to the said rules and regulations. The rules and regulations so made may require that billboards or other devices as aforesaid shall be licensed in accordance with the provisions thereof and of this act. The said rules and regulations need not be uniform throughout the commonwealth, and may prescribe license fees, to be fixed with regard to the cost of administering the provisions of this act.

SECTION 2. The division shall, before establishing or amending rules or regulations hereunder, hold duly advertised public hearings in the city of Boston and elsewhere in the commonwealth as it deems necessary or expedient.

SECTION 3. Cities and towns may, by ordinance or by-law, subject to the approval of the division and not inconsistent with the provisions of this act or of the rules and regulations made by the division, further regulate and restrict the said billboards or other devices within their respective limits.

SECTION 4. No person, firm, association or corporation shall post, erect, display or continue to maintain any billboard or other advertising device, whether already erected at the time when this act takes effect or not, on any public way or on private property within public view from any highway, public park or reservation, which advertises or calls attention to any business, article, substance or any other thing, unless such billboard or device conforms to the rules, regulations, ordinance or by-laws established under authority of this act: provided, however, that nothing herein contained shall apply to signs or other devices erected and maintained in conformity with existing law, advertising or indicating the person occupying the premises in question or the business transacted thereon, or advertising the property itself or any part thereof as for sale or to let.

SECTION 5. This act shall not apply to signs and other devices on or in the rolling stock, station, subways or structures of or used by common carriers.

SECTION 6. The supreme judicial court and the superior court shall have jurisdiction in equity on petition of the attorney-general or of any

city or town, or of any officer thereof or of any interested party, to restrain the erection or maintenance of any billboard, sign or device erected or maintained in violation of the provisions of any rule, regulation, ordinance or by-law adopted under the provisions of this act, and to order its removal or abatement as a nuisance.

SECTION 7. Any violation of any rule, regulation, ordinance or by-law adopted hereunder shall be punished by a fine of not more than one hundred dollars. Whoever unlawfully maintains a billboard, sign or advertising device as herein described for a period of twenty days after conviction thereof, shall be deemed to be guilty of a second offense and shall be further punished by a fine not exceeding five hundred dollars.

After public notice the Division held three hearings, at which individuals, representatives of various municipalities and corporations, and others, appeared and were fully heard. The following rules and regulations were adopted, to be in force on and after Dec. 31, 1920: —

#### SECTION 1. DEFINITIONS.

Terms used in the following rules and regulations shall be construed as follows: —

“Division” shall mean Division of Highways, Department of Public Works.

“License” shall mean the right to carry on the business of outdoor advertising by means of signs and billboards.

“Permit” shall mean the right to locate and maintain a particular sign.

“Person” shall mean any individual, partnership or corporation who erects or causes to be erected outdoor advertising signs, or is engaged in carrying on the business of outdoor advertising.

“Sign” shall mean any form of outdoor advertising for which a permit may be petitioned, or for which a permit may be granted under the provisions of these regulations.

“Outdoor advertising” shall mean advertising, the control of which, under the provisions of chapter 545, Acts of 1920, is vested in the Division of Highways, Department of Public Works.

#### SECTION 2. LICENSES.

A. No person shall engage in the business of advertising in this Commonwealth by means of outdoor advertising signs without first having obtained a license from the Division of Highways, Department of Public Works.

B. Applications for licenses may be made to the Division upon blanks prepared under its authority.

C. Applications shall contain such information as the Division may require, and must be accompanied by the proper fee.

D. The fee shall be \$50, and the license shall be in force for one year unless earlier suspended or revoked.

E. Applications for renewal of licenses may be made not later than thirty days prior to the date of expiration, and must be accompanied by the annual fee of \$50.

F. The Division reserves the right to suspend or revoke for cause any license issued by it under the provisions of this section.

### SECTION 3. PERMITS.

A. No sign shall be located or maintained except as hereinafter provided.

B. No sign shall be located until an application for a permit has been filed with the Division and the permit granted.

C. Applications shall be on forms prepared under the direction of, and furnished by, the Division, and shall contain such information as the Division may require.

D. Each sign shall carry the serial number of the permit authorizing its location in figures of a size approved by the Division.

E. Each application for the annual permit shall be accompanied by a fee of \$1, to be known as the examination fee; and upon issuance of a permit an additional fee of \$1, to be designated as an inspection fee, shall be paid by the licensee.

F. Permits shall be valid and in force, unless they are revoked by the Division, upon payment of the annual fees, which shall be due on the first day of July of each year. Failure to pay such fees within thirty days of the first day of July will be deemed sufficient reason for forthwith cancelling such permits.

G. The Division reserves the right to annul and revoke for cause any permit issued by it under the provisions of this section.

### SECTION 4. LOCATIONS.

A. No outdoor advertising shall be permitted within the bounds of any highway, nor on any location within 300 feet of any park, parkway, playground, State reservation or public building.

B. No outdoor advertising shall be permitted upon any rock or tree, nor upon any fence or pole bordering on any public highway.

C. The location of all signs shall be clearly stated in permits as issued.

### SECTION 5. CHARACTER AND MAINTENANCE.

A. Signs shall be of such size, shape and material as the Division shall approve, and shall be so erected and maintained as to conform to the provisions of the laws of the Commonwealth relating to fire hazard.

B. It shall be the duty of the licensee maintaining a sign under a permit from the Division to keep it and the ground about the same free from all rubbish, or any material which the Division may consider disadvantageous to the community.



C. The Division reserves the right to pass on all matter displayed on any sign maintained under a permit from the Division, and may require the licensee to remove any objectionable matter.

D. If the licensee fails to meet the requirements of this section, such failure shall be deemed sufficient cause for the revocation of the permit under which said sign was erected and maintained.

#### SECTION 6. RESTRICTIONS.

No permits shall be granted for the location or maintenance of signs near certain highways in territory which, in the opinion of the Division, is of unusual scenic beauty. Such places will be designated by the Division from time to time.

#### SECTION 7. REMOVALS.

All signs now located within the Commonwealth, and in any way affected by these rules and regulations, must be removed on or before July 1, 1921, unless permits for the location or maintenance thereof shall have previously been granted; provided, however, that signs for the maintenance of which applications shall have been made but not acted upon by the Division upon that date may be permitted to remain until such time as favorable action thereon is taken by the Division, or, in case of the Division's refusal to issue a permit, for a further period of ninety days from the date on which notice of such refusal has been mailed to the applicant.

#### SECTION 8.

These rules and regulations shall take effect Dec. 31, 1920.



## AIRCRAFT.

Chapter 306 of the General Acts of 1919, approved July 12, 1919, repealed chapter 663 of the Acts of 1913 regarding the use of aircraft. The act of 1919 aforesaid provides: —

SECTION 1. It shall be unlawful for any person to operate aircraft of any kind in this commonwealth unless he is licensed and the aircraft is registered, either by the Massachusetts highway commission, the joint army and navy board on aeronautic cognizance, or a federal board or department established by congress: provided, however, that the provisions of this section shall not apply to military or naval aviators while in the service of the United States, or of this commonwealth, nor to aircraft owned by the United States government or by this commonwealth, nor to unlicensed civilians when accompanied by a person licensed as aforesaid or by a military or naval aviator, but such licensed person or military or naval aviator shall be liable for the violation of any provision of this act committed by such unlicensed person.

SECTION 2. The Massachusetts highway commission may issue without examination a license hereunder to any person who was at any time commissioned as an aviator in the United States army or navy or naval reserve corps, or to any applicant who has passed an examination satisfactory to the commission and proved that he is skilled in the flying of aircraft, whether such examination is held by the commission or by some other officer or board approved by the commission.

SECTION 3. No person shall operate aircraft over buildings, persons or animals in such a manner or at such an altitude as to endanger his own life, or the lives or safety of those below him, or the safety of himself and his passengers, if he be carrying passengers, nor shall any person operate aircraft over the thickly settled district of any city or town except for the purpose of embarking from or alighting on designated landing places.

SECTION 4. No person shall operate aircraft in such a manner as to endanger the lives or safety of the public by the performance of unusual or dangerous maneuvers over any massed assembly of one hundred or more persons in the open, whether such persons be grouped in a grandstand or massed in an open field; nor shall any person throw or drop any missile or other article from any aircraft in flight, except over grounds temporarily or permanently devoted to flying, or over open water.

SECTION 5. Except in a case of emergency no person shall land aircraft in highways or public parks or other public grounds without permission from the authorities in charge thereof.

SECTION 6. Landing places for aircraft may, from time to time, be designated, set apart and marked, by the commission, or other public officials who are in charge of any land owned or controlled by the common-

wealth, or by any city or town, or by the metropolitan park commission, and said officials are hereby authorized to make reasonable rules and regulations governing the use of such landing places by aviators and other persons, and may change the same from time to time. All aviators and other persons using such landing places shall at all times comply with the rules and regulations made as aforesaid.

SECTION 7. The Massachusetts highway commission may prepare rules and regulations, from time to time, governing the use and operation of aircraft and relative to the licensing of operators thereof. Such rules and regulations shall take effect when approved by the governor and council and published in at least one newspaper printed and published in each county of the commonwealth, and such publication shall be sufficient notice to all persons.

SECTION 8. The fee for a license to operate aircraft shall be five dollars. The fee for the registration of aircraft shall be two dollars.

SECTION 9. Whoever violates any provision of this act or any rule or regulation made hereunder shall be punished by a fine of not less than ten nor more than five hundred dollars, or by imprisonment for not less than one month nor more than six months, or by both such fine and imprisonment.

SECTION 10. Chapter six hundred and sixty-three of the acts of nineteen hundred and thirteen is hereby repealed.

Up to Dec. 1, 1919, the Massachusetts Highway Commission, acting under authority of chapter 663 of the Acts of 1913, registered five machines and issued licenses to six persons.

On May 18, 1920, the following rules and regulations to govern the registration of aircraft and the licensing of aircraft operators were made by the Division, and the same were approved by the Governor and Council May 26, 1920: —

1. Every applicant for a license to operate aircraft shall file an application in accordance with the form submitted by the Department of Public Works, Division of Highways, accompanied by the fee required by law.

2. Every applicant for aircraft registration shall file an application in accordance with the form submitted by the Department of Public Works, Division of Highways, accompanied by the fee required by law.

3. Applications for the registration of an aircraft or for a pilot's license shall be referred to such agents as may be designated by the Division of Highways, for examination and approval, and if it shall be deemed necessary, applicants for pilots' licenses may be required to take an examination by such agent or agents as the Division of Highways may designate.

4. Aircraft registered under the provisions of the laws of the Commonwealth of Massachusetts shall carry an identification number of such size

and displayed in such a manner as may be definitely ordered by the Division of Highways when issuing license for registration.

5. Upon complaint in writing that any operator under a license issued by the Commonwealth of Massachusetts has in any way operated an aircraft to endanger public life and property, the operator shall be summoned before the Division of Highways for a hearing. Pending such hearing the license of said operator shall be suspended, and following such hearing may be definitely revoked.

The following forms of application for airplane registration and pilot's application, also forms of certificate of airplane registration and of operator's license, have been adopted: —

#### APPLICATION FOR AIRPLANE REGISTRATION.

Application is hereby made for registration of airplane as described below.

1. Type of machine.....
2. Full name of maker.....
3. Maker's number..... 4. Motor number.....
5. Horse power..... 6. Number of cylinders.....
7. Bore or internal diameter of cylinders.....
8. Owner of machine.....  
(Individual, co-partnership, association or corporation.)
9. Is machine insured?..... 10. Name and address of insurance  
company.....
11. Machine is to be used for following purposes (state whether for pleasure, business, passenger carrying, or other commercial use):  
.....  
.....
12. If for passenger carrying, designate routes, schedules and rates to be charged  
.....  
.....  
.....

Signed by.....

Address.....Street.....City.....State.

.....ss. ....192

Then personally appeared....., who made oath  
that the foregoing statements were true to the best of his knowledge and belief.

.....  
Investigated and approved.....  
.....  
.....192 .....

License to issue.....

*Commissioner of Public Works.*

## PILOT'S APPLICATION.

Name.....Date of birth.....  
 Sex.....Height.....Ft.....In. Color of hair.....Color of eyes.....  
 Address.....  
 Qualified by what authority.....  
 Date of qualification.....  
 Name of field or school where qualified.....  
 Conditions complied with.....  
 Make of machine used.....  
 Hours flown to date of qualification.....Hours flown since.....  
 Date of last solo flight.....19.... Minutes flown.....  
 Approximate hours and types of machines flown since date of qualification:

Type of Aircraft	Hours	Type of Aircraft	Hours
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Has applicant ever completed a regular course of aerial acrobatics?.....

If so, where and when?.....

Do you intend to operate aircraft as a private owner, pilot, corporation pilot, or for revenue passenger carrying?.....

Give records of accidents and / or breakages to planes.....

Has applicant any physical or other disability, such as defective vision, weak heart, etc.?.....

If so, give particulars.....

Are you familiar with the rules of the air, the rules in general use for getting away and landing at public aerodromes, and the rules in force at United States Army aerodromes?.....

Give names and addresses of two licensed pilots for references:

I hereby certify that I am fitted by training and experience to safely operate aircraft in Massachusetts.

Name.....	Address:
.....Street.....	.....City.....State.
.....ss.	.....192

Then personally appeared....., who made oath that the foregoing statements were true to the best of his knowledge and belief.

Investigated and approved.....

.....192

License to issue.....

*Commissioner of Public Works.*

## CERTIFICATE OF AIRPLANE REGISTRATION NO. ....

An airplane owned by.....  
 residing at No.....Street  
 .....Mass., is  
 hereby registered under the number above written, in accordance with the laws of  
 this State.

*Description of Vehicle.*

.....  
 .....Engine number,.....  
 Horse                  Number of  
 power.....; cylindere.....; Bore.....; Fee paid \$.....  
 Date.....192 .

JOHN N. COLE,  
 FRANK D. KEMP,  
 JAMES W. SYNAN,  
*Department of Public Works,*  
*Division of Highways.*

Approved.  
 .....

*Commissioner of Public Works.*

This registration will expire.....192 .

## AIRPLANE OPERATOR'S LICENSE NO. ....

....., residing at  
 No.....St.,.....Mass., is  
 hereby licensed to operate an airplane in accordance with the law of this State, and  
 under the rules and regulations established by the Department of Public Works.

*Description of Person licensed.*

Date of birth.....Sex.....  
 Height...Ft....In. Color of hair.....Color of eyes.....  
 Date issued.....192 .

JOHN N. COLE,  
 FRANK D. KEMP,  
 JAMES W. SYNAN,  
*Department of Public Works,*  
*Division of Highways.*

Approved.  
 .....

*Commissioner of Public Works.*

This license will expire in one year from date.

During the year the Division has made registration of air-  
 craft and issued certificates and airplane operators' licenses, as  
 follows: —



## REGISTRATION OF AIRCRAFT.

Certificate No.	NAME.	Fee received.	Date.
1	International Aircraft Corporation, 80 Boylston Street, Boston.	\$2 00	June 25, 1920
2	International Aircraft Corporation, 80 Boylston Street, Boston.	2 00	June 25, 1920
3	American Aerial Corporation, 462 Boylston Street, Boston	2 00	June 30, 1920
4	Albert H. Ternstall, Main Street, Brookfield . . .	2 00	July 14, 1920
5	Robert D. Fairbanks, 25 Carver Road, Newton Highlands.	2 00	July 23, 1920
6	Colonial Aerial Transportation Company, Inc., 743 Massachusetts Avenue, Arlington.	2 00	Aug. 17, 1920
7	George H. Watkins, 7 Story Street, Cambridge . . .	2 00	Sept. 27, 1920
8	Brooks, Banks & Smith Corporation, 21 Smith Block, Framingham.	2 00	Nov. 15, 1920

## AIRPLANE OPERATORS' LICENSES.

License No.	NAME.	Fee received.	Date.
1	Albert H. Ternstall, Main Street, Brookfield . . .	\$5 00	July 14, 1920
2	Frederick M. Stieber, 462 Boylston Street, Boston . .	5 00	July 16, 1920
3	Jack A. Mitchell, 743 Massachusetts Avenue, Arlington .	5 00	Aug. 3, 1920
4	Linwood W. Tracy, 91 Gainsboro Street, Boston . . .	5 00	Aug. 9, 1920
5	Hallock Rouse, 117 Commercial Street, West Lynn . .	5 00	Oct. 8, 1920
6	Melvin W. Hodgdon, 8 Indiana Avenue, Somerville . .	5 00	Sept. 9, 1920
7	George H. Watkins, 7 Story Street, Cambridge . . .	5 00	Sept. 27, 1920
8	Irl J. Elliott, Point of Pines, Revere. Care of E. J. Morgan	5 00	Oct. 8, 1920
9	John McDonough, 42 Delano Street, Revere. Care of A. B. Clark.	5 00	Oct. 25, 1920
13	Thomas Hayes Potter, 42 Delano Avenue, Revere . .	5 00	Oct. 18, 1920



## RECOMMENDATIONS FOR LEGISLATION.

## DIVISION OF HIGHWAYS.

*Land and Buildings for Storage and Other Purposes.*

1. The Commonwealth now has invested a large sum of money in tools and equipment used in connection with the construction and maintenance of highways. In addition to the property owned, the Division of Highways is responsible for the proper care of a large number of motor cars and trucks allotted to the Commonwealth by the Federal government. It is desirable that facilities should be provided for taking care of this machinery, and in a number of cases it has been found very difficult to secure proper accommodations that may be rented. It is believed that the State may very wisely purchase suitable sites or buildings, or both, for better providing these needed facilities, and it is recommended that legislation be passed in accordance with the draft of an act submitted.

*Closing Highways under Construction.*

2. The rapid increase in travel over the highways of the Commonwealth is making it increasingly difficult to control such operations as are necessary when construction and maintenance work is under way. In order that it may be possible to relieve this condition, it is recommended that legislation be passed in accordance with the bill submitted, to authorize the Division of Highways to close to travel public ways that may be under construction or improvement by it or by any agent it may authorize to do the work.

*Authority to open up Dangerous Corners.*

3. To more clearly define the powers of the Division of Highways in opening up dangerous corners and removing obstructions that tend to make travel on the highways more dangerous, it is believed that the law now in force relative to this matter should be amended substantially as set forth in the draft of an act presented, entitled "An Act relative to entry upon private land and the removal of trees by the Division of Highways of the Department of Public Works."

*Insurance for Operators of State-owned Motor Vehicles.*

4. The increasing hazards attending the operation of motor vehicles on the highways call for consideration for insurance that shall properly protect motor vehicle operators and others who may be involved in motor vehicle operation. It seems reasonable and proper that where employees of the Department are operating motor vehicles under orders from Department heads, and in carrying on the work required of them, the expense of such protection as insurance provides should be assumed by the Commonwealth. It is recommended that legislation to this end be enacted, and the draft of an act to provide for such payment is submitted.

*Extension of Workmen's Compensation.*

5. Under the existing laws, laborers and mechanics employed in the service of the Commonwealth are assured certain compensation in case of injuries, sickness and death, but no compensation is provided for engineers and their assistants exposed to the same liability to injury, accident and death on account of their employment. It is recommended that a law be passed so that all of these groups shall stand in the same relation toward the Commonwealth, in connection with a fair compensation, as do the laborers and mechanics under the present law. A draft of an act is submitted to provide for this extension.

*A More Definite Control of Highway Maintenance.*

6. Under the present provisions of law much work is carried on by the Division of Highways in co-operation with the several counties, cities and towns throughout the Commonwealth. Experience has demonstrated that after the construction work is completed there have been many cases where repairs and maintenance have not been properly taken care of by the particular agents responsible for them. In order that the work of maintenance that is so essential to the long life of expensively constructed roads may be more surely cared for, recommendation is made for a change in the existing law that shall provide for an agreement for maintenance as a part of the original contract for construction, and further provide for

an earlier opportunity for the State to proceed with any necessary repairs and work of maintenance than it is possible to do under the present law. A draft of an act is submitted to bring about this change.

*Fixing Authority for Counties and Towns to make Payments for Highway Work.*

7. There has arisen some question as to the full authority of county commissioners to carry out agreements that may be made with the Division of Highways in connection with co-operative work on the highways. To definitely authorize county commissioners to make payments to either the Division or the selectmen of towns, on account of such proportion of the work as the county may be responsible for, legislation is recommended as submitted in the draft of an act.

Much in the same way, town authorities frequently find themselves unable to provide the funds necessary to finance work for which contracts have been entered into. The Department recommends as a relief to this situation the passage of a bill submitted relative to borrowing of money by towns for such temporary needs.

*Altering and abandoning State Highway Locations.*

8. To more definitely fix the action necessary by the Division of Highways in altering the location of a State highway in a city or town, or in the abandonment of a portion of State highway already located in a city or town, certain changes in the law are necessary. The drafts of two acts embodying the necessary changes are submitted for consideration.

*Registry of Motor Vehicles.*

Massachusetts is fortunate in the laws in force for the control and regulation of motor vehicles. Changing conditions, however, require some few modifications to more definitely determine certain issues that have arisen during the past year, and to more satisfactorily control in some other cases. Legislation is recommended in the form of four different bills, the passage of which is respectfully requested: —

9. To authorize the Commissioner of Public Works to appoint an acting registrar of motor vehicles.

10. To eliminate certain petty charges in connection with number plates that may be furnished for other departments registering automobiles in the Motor Vehicle Registry.

11. To make clear the right of officers, charged with the responsibility of enforcing the motor vehicle laws, to more effectively control persons operating motor vehicles while under the influence of intoxicating liquors.

12. To provide a fitting punishment for persons who operate motor vehicles after licenses to so operate have been suspended or revoked.

### *Motor Vehicle Fees.*

13. The increased cost of highways is making a burden upon the Commonwealth impossible for it to bear unless increased revenue is provided for their construction and maintenance. The road that cost \$20,000 a mile when the fees for motor vehicle registration now in force were fixed, now costs in excess of \$40,000 a mile. Repairs and maintenance work involve a corresponding increase. The highways constructed any time previous to 1915 are to-day requiring new surfacing and in almost every case a widened surface to satisfactorily carry the heavy traffic. To meet this expense the burden may properly be placed upon the motor vehicle in the interest of which the present exacting demands are being made. It is believed that the time has come for making the fees for legislation provide a sufficient revenue to care for this increased demand, and the draft of an act is presented establishing a new schedule of rates in harmony with highway needs and the present cost of everything entering into construction and maintenance of highways.

## APPENDIX.

## HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920.

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed (Miles).	Length constructed (Miles).	Construction Expenditures to Dec. 1, 1920.
		From —	Direction.				
Abington . . . . .	1900-1-3	Brockton line . . . . .	Easterly . . . . .		1.729	1.729	
Abington . . . . .	1905-7	Holbrook line . . . . .	Easterly . . . . .		1.639	1.639	
Abington . . . . .	1911 . . . . .	Weymouth line . . . . .	Southerly . . . . .		.955	.955	\$57,403 75
Abington . . . . .	1913 . . . . .	North Abington . . . . .	Southerly . . . . .		1.080	1.080	
Abington . . . . .	1915 . . . . .	Whitman line to Maple Street . . . . .	Northwesterly . . . . .		.537	.537	
Acton . . . . .	1899-1900-1-2	Concord line to Littleton line . . . . .	Northwesterly . . . . .		3.711	3.711	
Acton (Harvard Pike) . . . . .	1901-7-12-13	Boxborough line to Concord line . . . . .	Northwesterly . . . . .		3.967	3.967	83,416 14
Acton . . . . .	1919 . . . . .	Connection at railroad crossing . . . . .	Easterly . . . . .		.188	.188	
Acushnet . . . . .	1901-3 . . . . .	Rochester line to Rochester line via Long Plain . . . . .	— . . . . .				
Acushnet . . . . .	1897 . . . . .	New Bedford line . . . . .	Westerly and northerly . . . . .		2.797	2.797	44,497 47
Acushnet . . . . .	1917 . . . . .	Fairhaven line . . . . .	Northerly . . . . .		.599	.599	
Adams . . . . .	1897 . . . . .	Chester line (Maple Grove) . . . . .	Northerly . . . . .		1.207	1.207	
Adams . . . . .	1908 . . . . .	Cheshire line (Orchard Street) . . . . .	Northerly . . . . .		.569	.569	24,460 44
Agawam . . . . .	1903-4-6-9-11	Southeast Bridge to Connecticut line . . . . .	Northerly . . . . .		1.459	1.459	
Amesbury . . . . .	1899-1901-3-4	Merrimac line . . . . .	Southerly . . . . .		3.093	3.093	46,856 28
Amesbury . . . . .	1906-7-12	Salisbury line . . . . .	Easterly . . . . .		2.243	2.243	
Amherst . . . . .	1901-4 . . . . .	Hadley line . . . . .	Westerly . . . . .		1.052	1.052	38,043 13
Amherst . . . . .	1913 . . . . .	Sunderland line . . . . .	Northwesterly . . . . .		.971	.971	
Amherst . . . . .	1915 . . . . .	South Hadley line . . . . .	Southerly . . . . .		.796	.796	
Amherst . . . . .	1919 . . . . .	End of 1913 section . . . . .	Northerly . . . . .		2.296	2.296	71,922 87
Amherst . . . . .	1919 . . . . .	Boston & Maine Railroad bridge to 1915 section . . . . .	Southerly . . . . .		.485	.485	
Andover . . . . .	1895-6 . . . . .	Lawrence line . . . . .	Southerly . . . . .		2.508	2.508	
Andover . . . . .	1897-9-1900-2-3, 20	North Reading line . . . . .	Southerly . . . . .		1.206	1.206	50,853 30
Arlington . . . . .	1916 . . . . .	Lexington line . . . . .	Southeasterly . . . . .		3.147	3.147	
					1.297	1.297	40,239 41



HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed to Dec. 1, 1920.	Construction expenditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).		
Ashburnham	1911	New Hampshire State line	Southeasterly	.672	.672	\$23,212 78
Ashburnham	1916	Winchendon line to Winchendon line <sup>1</sup>	Northeasterly	1.699	5.475	
Ashby	1894-5-6-7-8-9	Fitchburg line to Ashby post office.	Southeasterly	3.776	3.571	
Ashby	1910-11-12	Townsend line	Northerly	3.571	1.526	108,620 19
Ashby	1917	Ashburnham line	Southeasterly	1.826	1.826	
Ashfield	1897-8	One mile north of Ashfield post office	Easterly	1.826	1.608	35,282 05
Ashland	1903	Southborough line	Northerly	1.473	1.473	
Ashland	1895-6	Framingham line	Southerly	1.725	1.725	13,822 90
Athol	1910	Orange line	Southerly	1.607	1.607	
Athol	1902-3	Phillipston line	Southerly	1.496	1.496	
Athol	1919	Petersham line	Northeasterly	2.479	2.479	103,130 10
Attleboro	1900-1-3	North Attleborough line to Rhode Island line.	Northerly	2.651	2.651	
Attleboro	1909	Norton line	Southeasterly	.738	.738	20,722 11
Auburn	1895-7-8-9-1901-3-4	Worcester line to Oxford line	Northeasterly	5.299	5.299	70,199 85
Avon	1914	Brookton line to Avon Square.	Southeasterly	1.310	1.310	
Avon	1920	Randolph line	Northerly	.327	.327	11,896 81
Ayer	1912	Littleton line to Littleton line.	Southerly	.127	.127	
Ayer	1913-14	Shirley line	Southeasterly	1.498	1.498	
Ayer	1916	Littleton line	Northeasterly	1.853	1.853	78,143 83
Barnstable (north)	1909	Yarmouth line	Westerly	1.912	1.912	
Barnstable (north)	1899-1902-7-10-11	Sandwich line	Easterly	5.490	5.490	
Barnstable	1918	End of 1916 layout	Easterly	.552	.552	
Barnstable (south)	1897-1901	Yarmouth line	Westerly	2.263	2.263	
Barnstable, West	1904-5-7	Mashpee line	Easterly	3.870	3.870	146,708 43
Barnstable, West	1916	Mashpee line	Easterly	.265	.265	
Barnstable	1918	Easterly end of 1905 layout	Easterly	2.184	2.184	
Barnstable	1919	Connecting 1901 and 1918 sections	Easterly	3.301	3.301	
Barre	1897-9	Ware River to Barre Common	Northeasterly	2.891	2.891	32,030 95
Barre	1919	Petersham line	Southeasterly	3.171	3.171	
Barre	1920	¾ mile west of Oakham line	Easterly	.324	.324	
Becket	1902-4-5-6-8-10-12-13	Chester line to Lee line	Westerly	10.812	10.812	241,620 65
Bedford	1916	Washington line to Bonney Rigg	Southeasterly	6.906	6.906	
Bedford	1897-1902	Lexington	Northeasterly	1.079	1.079	
Bedford	1903-5	Carlisle Bridge	Southeasterly	.569	.569	22,145 82









HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length con- struction Ex- penditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).	
Fitchburg	1894-5	Westminster line	Easterly	.973	
Fitchburg	1897	Lunenburg line	Westerly	.605	\$51,198 72
Fitchburg	1900-1-3-4	Ashby line	Southerly	2.540	
Florida	1913	Savoy line	Easterly	.029	134,722 06
Florida	1914	North Adams line	Southeasterly	7.163	
Foxborough	1901-2	Mansfield line	Northerly	1.815	19,537 02
Foxborough	1905-8	Wrentham line	Southeasterly	1.699	
Framingham	1904-5	Southborough line, Pleasant Street	Southeasterly	2.432	17,335 26
Framingham	1910	Ashland line, Hollis Street	Northerly	.773	
Franklin	1905-7-10	Bellingham line	Easterly	2.579	29,713 89
Franklin	1911	Wrentham line	Northwesterly	1.184	
Freetown	1902-3	New Bedford line to Lakeville line	Northerly	3.193	28,255 70
Freetown	1908	Fall River line to Assonet	Northwesterly	.676	
Gardner	1897-8	Temple Street line	Easterly	2.371	44,612 63
Gardner	1900-1	Westminster	Northwesterly	.985	9,702 98
Gay Head	1913	Chilmark line	Northwesterly	3.134	4,522 20
Gill	1912	Barnardston line to Northfield line	Easterly	.284	
Gloucester	1894-5-8-1905-6-7	Manchester line to "Cut Bridge"	Northerly	3.464	141,829 77
Gloucester	1907	Rockport line	Southerly	.524	
Gloucester	1915-16	Essex line	Easterly	2.762	46,440 20
Grafton	1894-5-8	Williamsburg line	Northwesterly	2.460	92,568 39
Grafton	1897-9-1903-5-12-13-14-15	Millbury line to Northbridge line	Southerly	6.510	
Grafton	1908	Upon line to Grafton Village	Northwesterly	3.068	
Granby	1894-1902-5-6-8	South Hadley line	Easterly	2.260	87,008 07
Granby	1911-12-14	North Street and Belchertown	Southeasterly	3.203	
Granby	1915	South Hadley line to Amherst line	Northwesterly	2.034	
Granby	1919	Connecting 1908 section	—	.189	
Great Barrington	1894-6-7-1902	Housatonic River Bridge	Easterly	3.409	153,467 25
Great Barrington	1916-17	Stockbridge line	Southerly	2.289	
Great Barrington	1919	Sheffield line	Northerly	2.096	
Great Barrington	1919	End of 1917 section	Southerly	.909	
Greenfield	1890-1900-2	Washington Street	Easterly	1.421	
Greenfield	1903-6-7-8-10-14	Barnardston line	Southeasterly	3.768	161,210 24
Greenfield	1905	Point on Colrain road	Northerly	.262	
Greenfield	1919	Shelburne line	Southeasterly	2.337	



Groton	1901-2-7	Pepperell line	Southwesterly	1.410	46,195 05
Groton	1894-1904	Pepperell line	Southwesterly	1.105	-
Groton	1919	Littleton line	Northwesterly	3.836	-
Groveland	1900-1-2-5	Merrimae River Bridge to West Newbury line	Northeasterly	1.723	22,613 35
Hadley	1894-1904	Connecticut River to Amherst line	Easterly	4.690	73,541 83
Hamilton	1899-1900-16	Ipswich line	Southwesterly	1.881	36,438 40
Hamilton	1909-10	Wenham line	Northeasterly	1.221	51,981 28
Hancock	1895-6-8-9	Pittsfield line to New York State line	Westerly	3.232	85,517 37
Hanover	1908	Four Corners	Northeasterly	1.285	6,344 68
Harwick	1906-8	Pembroke line to Norwell line	Northerly	8.819	29,361 41
Harwick	1897-1901	New Braintree line	Westerly	2.316	33,756 03
Harvard	1900-5-10	Boxborough line to Harvard Common	Easterly	5.098	52,243 68
Harwich	1899-1900-1-2-3	Dennis line to Chatham line	Northerly	1.379	83,475 14
Harwich	1908	Chatham line to Brewster line	Northerly	3.540	-
Hatfield	1901-6-8-9-10-11	Northampton line to Whately	Easterly	2.657	-
Haverhill	1902-7-10	Kenzoa Road to Merrimae line	Westerly	2.629	-
Haverhill	1899	River and Maxwell streets to Methuen line	Northeasterly	1.430	-
Haverhill	1912	North Andover line	Easterly	1.405	-
Hingham	1894	Weymouth Back River	Westerly	1.286	-
Hingham	1896-7-1916	Cohasset line	Easterly	1.224	-
Hingham	1917	Point on State highway	Southwesterly	2.242	-
Hingham	1919	Weymouth line to Norwell line	Southwesterly	3.525	-
Hinsdale	1901-2-3-20	Dalton line	Northeasterly	1.739	-
Holbrook	1894-6-1902	Weymouth line	Southwesterly	8.823	-
Holbrook	1917	Braintree line	Northerly	6.949	-
Holden	1898-1900-5-8-15	Worcester line to Rutland line	Easterly	3.316	-
Hopedale	1918	Upton line to Milford line	Northeasterly	3.314	-
Holliston	1908-7-10	Milford line	Southwesterly	1.610	-
Holliston	1911-12	Ashtand line	Southerly	4.167	-
Holyoke	1905-5-10	Easthampton line	Southerly	1.142	-
Hudson	1906-7	Brigham Street to Marlborough line	Westerly	1.009	-
Huntington	1895-6	Russell line	Southwesterly	8.444	-
Huntington	1918-20	Worthington line	Northerly	2.134	-
Huntington	1903-6-9-17	Chester line	Southwesterly	2.287	-
Ipswich	1907-8-9	Hamilton line to Ipswich Common	Southerly	1.016	-
Ipswich	1910-11	Rowley line	Southerly	8.11	-
Ipswich	1905-6	Duxbury line	Northeasterly	7.712	-
Kingston	1916	Duxbury line	Southwesterly	3.570	-
Kingston	1917	Plymouth line	Northwesterly	4.790	-
Kingston	1901-2	New Middleborough Avenue	Northerly	1.249	-
Lakeville	1910-11-12	Freetown line to Berkley line	Southwesterly	1.249	-
Lancaster	1902	Clinton line to Sterling	Northerly	1.249	-

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed (Miles).	Construction Expenditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).		
Lanesborough	1911-12-13	Cheshire line to Pittsfield line.	Southerly	2.290	2.290	\$88,471 73
Lanesborough	1919	Pratt Brook	Southerly	.990	.990	
Lawrence	1896	Methuen line	Northerly	.267	.267	18,485 36
Lawrence	1915	Methuen line	Southwesterly	.543	.543	
Lee	1894-5-6-1908-9-12-13	Southbridge line to Becket line	Easterly and northeasterly	8.427	8.417	
Lee	1900	Lenox line to Lee Village	Southerly	1.259	1.259	167,954 81
Lee	1906	Lenox line to Stockbridge line	Southerly	1.020	1.020	
Leicester	1894-5-6-8-9	Worcester line to Spencer line	Southerly	4.819	4.846	77,342 47
Leicester	1920	End of 1895 layout to junction with 1896 layout	Westerly	.618	—	
Lenox	1899-1900-1	Lee line to Lenox line (Walker Street)	Northerly	2.282	2.282	
Lenox	1904-5	Pittsfield line to Lenox Village	Southerly	3.181	3.181	39,165 93
Lenox	1906	Lee line to Lenox Village (Kimball Street)	Northerly	2.200	2.200	
Leominster	1901-2-15	Sterling line	Northerly	2.549	2.549	31,192 99
Lexington	1895-6-7-8	Massachusetts Avenue	Westerly	3.446	3.446	
Lexington	1900	Bedford line	Southwesterly	.845	.845	54,916 98
Lexington	1916	Arlington line	Northwesterly	.333	.333	
Lexington	1919	End of 1916 section	Westerly	.383	—	
Lincoln	1895-6-7	Lexington line to Concord line	Northwesterly	2.060	2.060	17,392 38
Littleton	1902-3-4	Acton line, Great Road	Northerly and westerly	5.256	4.010	
Littleton	1902	Westford line to Great Road	Southwesterly	.337	.337	126,164 25
Littleton	1912-13-18	Ayer line	Southwesterly	3.015	1.632	
Littleton	1920	Easterly end 1912 layout, section 2	Easterly	.220	.220	
Lowell (boulevard)	1897	Tyngsborough line	Easterly	.969	.969	
Lowell (Princeton Street)	1897-8	Chelmsford line	Easterly	1.334	1.334	22,990 33
Lowell	1900	Tewksbury line	Northwesterly	.351	.351	
Lunenburg	1898-9-1900-1-3-10-13	Fitchburg line to Shirley line	Easterly and southeasterly	5.886	5.886	64,165 46
Lynn	1898	Saugus River to Sea Street	Northwesterly	.905	.905	
Lynn	1916	Salem line to Floating Bridge	Southwesterly	.369	.369	193,363 68
Lynn	1914	Lynnfield line	Southwesterly	1.985	1.985	
Lynn	1917	Fox Hill Bridge	Southerly	.403	.403	
Lynnfield	1914	Lynn line	Westerly	.031	.031	
Lynnfield	1920	Saugus line to Peabody line	Northerly	1.491	1.491	18,199 31
Malden	1918	Melrose line	Southwesterly	.151	.151	6,304 93



Mansfield	1901	Foxborough line	Southeasterly	720	720	10,068 19
Mansfield	1906	Norton line	Northerly	493	493	
Marion	1897-9-1901-2	Marion Village to Mattapoisett line	Westerly	1,855	1,846	38,557 65
Marion	1903	Marion Village to Rochester line	Northwesterly	2,134	2,120	
Marion	1904	Northerly end of 1897 section	Northerly	1,042	1,050	
Marion	1894-5-1901	Marion Village to Wareham line	Northwesterly	1,579	1,594	
Marion (east)	1897-1902-3-4	Sudbury line to Hosmer line	Westerly	3,114	3,114	
Marion (west)	1897-9-1900-1-16	Northborough line	Easterly	2,590	2,590	86,318 61
Marlborough	1908-11	Hudson line	Southerly and southwesterly	1,278	1,278	
Marlborough	1894-1910	Duxbury line to North River Bridge	Northwesterly	8,277	8,277	54,626 51
Marshfield	1911-12-13-14	Falmouth line to Barnstable line	Northwesterly	5,724	5,724	
Mashpee	1916	Barnstable line (Cotuit Road)	Northwesterly	2,088	2,080	70,374 44
Mattapoisett	1894-5	Fairhaven line	Westerly	1,162	1,162	
Mattapoisett	1900-1-3	Marion line	Westerly	2,044	2,044	
Medford	1907	Somerville line via Mystic Avenue	Westerly	862	862	24,528 57
Melrose	1906	Saugus line, Upham Street	Northerly	395	395	30,974 24
Melrose	1917	Malden line to Saugus line	Northerly	173	173	12,230 89
Mendon	1918	Hopedale line	Southwesterly	928	928	
Merrimac	1897-8-9-1910	Haverhill line	Easterly	1,025	1,025	
Merrimac	1901-3	Amesbury line	Southwesterly	1,206	1,206	23,486 74
Methuen	1896-1908	Lawrence line to Haverhill Street	Northwesterly	3,688	3,688	153,940 98
Methuen	1912-15-16-17	Dracut line to Lawrence line	Northwesterly	4,109	4,109	
Middleborough	1894-1903	Nemasket River to Rochester line	Northwesterly	8,978	8,978	63,281 91
Middleborough	1906-7-8	Bridgewater line to railroad bridge	Southerly	3,465	3,465	61,728 11
Middleton	1912-13-14	North Andover line	Southeasterly	2,655	2,655	
Milford	1904-5	Hopedale line via West Street	Southeasterly	1,745	1,745	31,163 99
Milford	1909-10	Holliston line	Southwesterly	1,801	1,801	
Millbury	1902	Worcester line to Grafton line	Southwesterly	782	782	
Millbury	1900-3-4	Sutton line	Southerly	1,612	1,612	28,157 11
Millbury	1906	Uxbridge line to Blackstone line	Northwesterly	587	587	
Millville	1899-1900-2-9	Neponset River to Granite Bridge	Southwesterly	1,657	1,630	15,573 20
Milton	1899-1900-17	Railroad Bridge toward Palmer	Southwesterly	1,057	1,057	
Monson	1894	Palmer line to Brimfield line	Northerly	934	934	16,302 49
Monson	1901-5	Palmer line	Northwesterly	394	394	
Monson	1908	Third Street near I Street, Turners Falls	Easterly and westerly	287	287	
Montague	1898-9-1904-6-10	Connecticut River Bridge	Easterly	4,052	4,052	52,207 21
Montague	1905-9	First Milestone, Siasconset	Northwesterly	1,678	1,678	53,049 14
Nantucket	1894-1903	Wellesley line to Lincoln Square	Easterly	6,479	6,465	
Natick	1901	Sherborn line to Cemetery Street	Westerly	1,135	1,135	21,634 66
Natick	1903	Newton line	Easterly	2,069	2,069	
Needham	1901	Charles River Bridge, Chestnut Street	Westerly	995	995	
Needham	1905		Northerly	1,040	1,040	11,612 71

1 Exclusive of Leicester Village.

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed to Dec. 1, 1920.
		From —	Direction.	Length (Miles).	
New Braintree	1897	Hardwick line to Ware line	Southerly	.174	\$3,944 07
New Braintree	1903	New Braintree Village	Northerly	.223	46 85
New Marlborough	1917	Sheffield line to Connecticut line	Easterly	.230	34,042 79
Newbury	1899-1906	Newburyport line to Rowley line	Southerly to southwesterly	4.231	34,307 69
Newburyport	1896-7-8	West Newbury line	Easterly	1.754	6,836 54
Newburyport	1918	Newbury line	Easterly	.372	16,602 60
Newburyport	1913	Bridge Street to River Street	Northerly	.064	95,637 05
Newton	1901	Needham line	Easterly	1.032	
Norfolk	1895	Walpole line to Wrentham line	Southwesterly	1.446	
North Adams	1894-6-7	Williamstown line	Easterly	2.173	
North Adams	1900-1-2-3	Ashland Street Bridge to Adams line	Southerly	2.319	
North Adams	1913	Florida line	Northerly	3.644	
North Andover	1900-2-4	Lawrence line	Northerly	1.890	
North Andover	1907-10-11-12	Osgood Park, Pleasant and Court streets, to Haverhill line	Southwesterly	3.721	
North Andover	1913-14-15	Andover Street to Middleton line	Northerly	4.063	193,997 43
Northampton	1894	Hadley Bridge	Southwesterly	.569	
Northampton	1918	Williamsburg line	Southwesterly	1.352	
Northampton	1897-8-9-1900-5	Easthampton line	Southwesterly	1.462	131,792 92
Northampton	1912	Easthampton line, River Road	Northeasterly	1.440	
Northampton	1912-15	Hatfield line, Laurel Road	Southwesterly	2.180	
North Attleborough	1894-5-6-7-9	Bruce Avenue to Attleboro line	Southerly and southwesterly	3.598	24,168 98
Northborough (east)	1897-8-1911	Marlborough line to Shrewsbury line	Southwesterly	4.937	44,153 43
Northborough (south)	1897	Westborough line	Northerly	.423	
Northbridge	1913-14-15-16	Grafton line	Southwesterly	3.333	125,988 32
Northbridge	1919	Uxbridge line	Southerly and southwesterly	3.343	
North Brookfield	1905-6-7-8-10	Brookfield line	Northerly	1.166	31,295 14
Northfield	1901-2-12	Barnardston line	Northerly	2.252	71,948 83
Northfield	1912	New Hampshire line	Southwesterly	3.040	
Northfield	1919	Connecting constructed sections	Southerly	1.238	
North Reading	1897-8-1901-3-11	Andover line to Reading line	Northerly	2.538	23,094 12
Norton	1906	Mansfield line	Southerly	.502	
Norton	1916-17	Norton Center	Southerly	2.926	78,718 90
Norton	1908-9-11	Attleboro line to railroad station	Easterly	4.193	

Norwell	1919	Hingham to Hanover line	Southeasterly	2,138	50,234 37
Norwood (south)	1897-9	Walpole line	Northerly	1,036	19,980 69
Norwood (north)	1895-6	Westwood line	Southerly	1,087	20,929 85
Oak Bluffs	1894-5-6-1917	Sengekontacket Bridge	Northerly	2,387	1,715 25
Oakham	1917	Barre line to Rutland line	Southeasterly	2,792	53,101 38
Orange	1894-5-7	Athol line	Westerly	2,183	
Orange	1900-1-3-4-5	Erving line	Easterly	2,612	
Orleans	1900-1-4	Brewster line to Eastham line	Northeasterly	1,980	20,467 72
Orleans	1903-4-5	Brewster line to Shattuck Corner	Northerly and northwesterly	2,718	
Oxford	1906-7	Auburn line	Southeasterly	1,849	57,798 31
Oxford	1908-9-20	Charlton line	Northeasterly	2,252	
Oxford	1913-14-16	Webster line	Northeasterly	2,282	
Palmer	1901	Tennyville to Monson line	Southeasterly to westerly	1,179	
Palmer	1905-8	Tennyville to Warren line	Easterly	7,526	130,538 35
Palmer	1917	Ware line	Southerly	4,329	
Palmer	1906-8-9	Wilbraham line	Easterly	2,336	
Paxton	1895-1902	Worcester line	Northwesterly	3,597	48,576 79
Peabody	1920	Andover Street (from Danvers line)	Southeasterly	3,526	
Peabody	1920	Newburyport Turnpike (Lynnfield line to Danvers line)	Northeasterly	2,712	77,321 93
Pembroke	1900-1915	Hanover line to Duxbury line	Southerly	4,345	27,988 16
Pepperell	1907-10-11-14	Nashua River Bridge to Townsend line	Northwesterly	3,578	35,651 83
Petersham	1918	Barre line	Northwesterly	3,664	147,197 03
Petersham	1919	Athol line	Southeasterly	4,523	
Phillipston	1897-1902-4-9	Athol line to Templeton	Easterly and northeasterly	2,785	31,134 20
Pittsfield	1894-8-1901-2-9-13	Hancock line	Easterly	3,643	
Pittsfield	1897-1906-7	Dalton line	Southeasterly	2,365	108,192 18
Pittsfield	1904-5	Lenox line	Northerly	1,580	
Pittsfield	1913	Lenesborough line to Dalton Road	Northerly	1,465	
Plainville	1894-5-1899-1911	Wrentham line to North Attleborough line	Southerly	2,293	6,075 98
Plymouth	1894-1904-7-10-11	Wallingley to Bourne line	Southerly	14,300	145,323 65
Princeton	1897-1900-2-3	Princeton Depot	Easterly	2,230	21,948 85
Provincetown	1901-3-20	Truro line to Alberton Street	Westerly	1,340	15,257 05
Provincetown	1916	State highway to Race Point	Northwesterly	2,528	
Quincy	1899	Chubbuck Street to Fore River Bridge	Southeasterly	494	
Quincy	1904	Randolph line to Milton line	Northerly	1,232	26,587 83
Quincy	1902-9	Braintree line	Northerly	949	
Randolph	1902-3-9	Quincy line	Southeasterly	1,900	49,560 90
Randolph	1915	Avon line	Northwesterly	1,810	
Raynham	1901-2-3	Taunton line, Dean Street	Northeasterly	1,477	
Raynham	1912-13	Southerly end of Hoekamoek Swamp	Southerly to southwesterly	2,670	52,862 99
Raynham	1915	Taunton line	Northerly	1,506	
Reading	1899-1900-15	Stoneman line	Northerly	1,206	
Reading	1902-3	North Reading line	Southerly	2,667	31,010 71

## HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — Continued.

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed (Miles).	Construction Expenditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).		
Rehoboth	1895-1908	Seekonk line to Dighton line	Easterly	6.034	6.034	\$59,715 93
Rehoboth	1912	Swansea line to Seekonk line	Northwesterly	.512	.512	
Revere	1897-8	Boston line	Northwesterly	.577	.577	406,998 10
Revere	1899-1913	Saugus line	Southwesterly	1.113	1.113	
Revere	1913-16	Point of Pines to parkway	Southerly	3.335	3.335	33,348 45
Richmond	1897-1907	Railroad station to Pittsfield line	Northwesterly	4.017	4.017	
Rochester	1903	Marion line to Aushnet line	Westerly	5.270	5.270	7,948 43
Rochester	1909	Middleborough line to Wareham line	Southwesterly	.900	.900	
Rockland	1902-5-6	Abington line to Hanover line	Easterly	2.354	2.354	13,515 80
Rockport	1902-6-10	Gloucester line	Northwesterly	1.600	1.600	21,001 52
Rowley	1905-7-8-9	Newbury line	Southwesterly	2.903	2.903	22,767 50
Rowley	1911	Ipswich line	Northwesterly	.730	.730	
Russell	1894-5-6-7-8-9	Westfield line to Huntington line	Northwesterly	6.676	6.676	93,959 40
Russell	1917	Blandford line to Woronoco	Easterly	3.044	3.044	
Rutland	1904	Holden line	Northwesterly	1.160	1.160	
Rutland	1917	Oakham line	Easterly	2.699	2.699	9,734 21
Rutland	1919	Connecting sections constructed		1.690	1.690	
Salem	1901-9	Syamspscott line	Northwesterly	1.398	1.398	71,102 13
Salem	1914	Lynn line	Northwesterly	1.912	1.912	
Salisbury	1916	Broadway to New Hampshire line	Northwesterly	2.020	2.020	
Salisbury	1904-5-12	Salisbury Village to Newburyport Bridge	Northwesterly	1.559	1.559	
Salisbury	1910	New Hampshire line to Village	Southerly	2.410	2.410	97,986 20
Salisbury	1911-12	Amesbury line	Southerly	1.742	1.742	
Salisbury	1913-14	Salisbury Square to Salisbury Beach	Southeasterly	2.172	2.172	
Sandwich	1897-8-1900-2-10-12-13-19	Barnstable line to Bourne line	Westerly and northwesterly	7.584	7.584	72,414 96
Sandwich	1914	Mashpee line to Barnstable line	Southwesterly	1.114	1.114	
Sandwich	1919	Sandwich Village	Southerly	1.818	1.817	
Saugus	1899-1913	Fox Hill Bridge to Revere line	Southwesterly	1.641	1.641	210,386 11
Saugus	1906-1914	Melrose line to Newburyport Turnpike	Southwesterly	.864	.864	
Saugus	1917	Melrose line to Newburyport Turnpike	Northwesterly	.850	.850	
Saugus	1919	Lynnfield line	Southerly	.044	.044	7,537 04
Savoy	1913	Florida and Savoy at Cold River	Southerly	1.760	1.760	
Savoy	1914	Florida line to Charlemont line	Easterly	1.765	1.765	49,171 58
Scituate	1894-1910	Cohasset line to Mansfield line	Southerly	5.374	5.374	



Seekonk	1900-1-2-4	Rehoboth line to Rhode Island line	Westerly	2,757	2,757
Seekonk	1910-11-13	Perry Avenue to Rehoboth line	Southeasterly	3,272	3,272
Sharon	1908	Foxborough line	Northeasterly	638	638
Sheffield	1912-13-14-15-17	Connecticut line	Northeasterly to northerly	5,600	5,600
Sheffield	1914-15-18	Connecticut line via Ashley Falls Road	Northerly	3,284	3,284
Sheffield	1919	Great Barrington line	Southerly	2,620	2,620
Shelburne	1894-5-6	Bridge Street to Colrain line	Northeasterly	2,159	2,159
Shelburne	1916	Bridge Street	Northeasterly	4,424	4,424
Shelburne	1919	Greenfield line	Northeasterly and southerly	2,706	2,706
Shirley	1913-14	Ayer line to Lunenburg line	Westerly	3,618	3,618
Shrewsbury	1895-1904	Worcester line to Northborough line	Northeasterly	4,854	4,854
Somerset	1895-1910-14-15	Slades Ferry Bridge	Northerly	6,379	6,379
Somerset	1902-4-9	Slades Ferry Bridge to Swansea line	Northerly	2,401	2,401
Somerset	1909-15	Slades Ferry Bridge, Brayton Avenue	Westerly and southerly	2,86	2,86
Somerset	1914-15	Junction of Riverside and Brayton Avenues to Swansea line	Northeasterly	1,853	1,853
Somerville	1908	Medford line via Mystic Avenue	Westerly and northwesterly	1,160	1,160
Somerville	1914	Junction of Middlesex and Mystic Avenues	Southeasterly	423	423
Southampton	1905-9	to Fellsway Boulevard	Northerly	708	708
Southborough	1902-5	Easthampton line	Southerly	1,895	1,895
Southborough	1907	Westborough line	Easterly	1,653	1,653
Southborough	1909	Ashland line	Westerly	1,143	1,143
Southborough	1909	Framingham line	Southwesterly	909	909
Southbridge	1902	Charlton line	Southwesterly	448	448
Southbridge	1907	Sturbridge	Easterly	2,419	2,419
South Hadley	1895-7-8-9-1900	Granby line to South Hadley Falls	Northeasterly	4,637	4,637
South Hadley	1903-4-9-12	South Hadley Falls to Granby line	Northeasterly	315	315
South Hadley	1915	Amherst line to Granby line	Southerly	1,600	1,600
Spencer	1897-1900-1	Leicester line	Westerly	1,459	1,459
Spencer	1906-10-11	Brookfield line to Seven Mile River Bridge	Easterly	2,707	2,707
Sterling	1897-8-1912	Near Town Hall to West Boylston line	Southerly	2,413	2,413
Sterling	1905-7-9-14-15	Leicester line to village	Southwesterly	3,038	3,038
Sterling	1906-7-13-14	Leicester line	Southerly	1,066	1,066
Stockbridge	1905-9	Lee line, South Lee	Westerly	2,229	2,229
Stockbridge	1906	Lee line to East Lee	Northeasterly	958	958
Stockbridge	1917	Great Barrington line	Northerly	1,013	1,013
Stoneham	1907-8	South Street	Northerly	1,160	1,160
Stoneham	1900-1	Reading line	Southerly	2,143	2,143
Stoughton	1902-3	Canton line to Lincoln Street	Northerly	2,258	2,258
Stoughton	1904-5	Easton line to Walnut Street	Northerly	2,353	2,353
Stoughton	1914-15	Brookton line to Park Street	Northeasterly	5,114	5,114
Sturbridge	1897-1903-4-7-9	Sturbridge line	Northeasterly	3,971	3,971
Sudbury	1897-8-1900-1-2-3	Marlborough line to Wayland line	Easterly	50,441 07	50,441 07
Sunderland	1897-1903-4-5-7-9-13-14	Connecticut River Bridge to Amherst line	Southerly	13,948 99	13,948 99
				22,148 17	22,148 17
				11,125 21	11,125 21
				67,656 97	67,656 97
				45,074 11	45,074 11
				118,310 29	118,310 29
				39,321 16	39,321 16
				14,952 32	14,952 32
				41,891 41	41,891 41
				29,404 97	29,404 97
				37,053 79	37,053 79
				51,271 14	51,271 14

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed (Miles).	Construction Expenditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).		
Sutton	1899-1901-2-20	Millbury line	Southerly	6.075	6.075	\$15,405 41
Sutton	1903-4	Douglas line to Manchaug	Northerly	.822	.822	
Swampscott	1897-1900-1	Salem line to Burrill Street	Southwesterly	1.491	1.491	29,433 53
Swansea	1905-6-7-9-10-11-12	Somerset line to Rehoboth line	Northwesterly	6.649	6.649	
Swansea	1915-16	Somerset line (Wilbur Avenue to Rhode Island line)	Northwesterly and southeasterly	2.811	2.811	48,474 53
Taunton	1895-6-8-9-1900-1	Dighton line, Winthrop Street	Easterly	2.933	2.933	
Taunton	1905-6-13	Dighton line, Somerset Avenue	Northeasterly	1.357	1.357	
Taunton	1907-13	Berkley line	Northwesterly	2.366	2.366	
Taunton	1912	Raynham line, Broadway	Southerly	.383	.383	
Taunton	1914-17	Lakeville line	Westerly	1.477	1.477	
Taunton	1919	Norton line	Southeasterly	2.116	.400	
Templeton	1899-1901-2-3	Gardner line at Otter River	Westerly	2.002	2.002	66,662 19
Templeton	1905-6-7-8-9	Philadelpia line to Baldwinville	Northeasterly	3.686	3.686	
Tewksbury	1900-1-2-3-4-5-6-15	Lowell line to Wilmington line	Southwesterly	6.186	6.186	53,716 96
Tisbury	1894	Vineyard Haven to West Tisbury line	Southwesterly	1.926	1.926	14,613 71
Townsend	1896-1911	Groton line to Ashby line	Westerly	6.034	6.034	46,980 41
Truro	1895-1906-20	Wellfleet line via Kelly's Corner	Northwesterly and northerly	10.093	10.093	63,800 51
Tyngsborough	1895-6	Tyngsborough Bridge to Lowell line	Southeasterly	2.942	2.942	
Tyngsborough	1909-10-11-12-13	New Hampshire line to Chelmsford line	Southerly and northwesterly	3.998	3.998	63,785 74
Upton	1918	Grafton	Southeasterly	1.034	1.034	
Upton	1919	Hopedale line	Northwesterly	2.458	2.458	
Uxbridge	1897-8-1901-3-6-9-10-16	Millville line to village	Northwesterly	3.617	3.617	62,396 77
Uxbridge	1902-14	Northbridge line to Munford River Bridge	Southwesterly	1.198	1.198	
Wales	1901-20	Brimfield line	Southwesterly	5.100	5.100	3,963 17
Walpole, South	1894-5-7-1900-12-16	Norfolk line	Southwesterly	3.307	3.307	57,874 76
Walpole, North	1897-8-1900-11	New Braintree line	Northerly	1.970	1.970	
Ware	1897-9-1900-3	Junction of Palmer and Belchertown roads	Southerly	2.282	2.282	99,938 56
Ware	1909-10-20	Weaverd River Bridge to High Street	Northwesterly	4.520	4.520	
Wareham	1896-1901-6-7-10	Colnasset Narrows Bridge to Wareham	Northwesterly	2.195	2.195	
Wareham	1898-1901-3-10-17	Narrows Bridge	Westerly and southwesterly	6.639	6.639	114,137 33
Wareham	1905-6-7-8	Parker's Mills to Rochester line	Northwesterly	3.404	3.404	
Wareham	1919	Parker's Mills	Southerly	.998	.998	



Warren	1896-7-8-1900-7-8	Warren Village to Palmer line	Westerly	2,690	2,690
Warren	1899-1900-1	Warren Village to West Brookfield line	Easterly	1,410	1,410
Warren	1919	Connecting old sections	-	840	840
Washington	1920	Hinsdale line	Southerly	2,107	2,107
Watertown	1895-6	Walham line	Easterly	580	580
Wayland	1897-1900-3	Weston line to Sudbury line	Westerly	2,581	2,581
Wayland	1920	Section 1 to section 2 of 1900 layout No. 2	Easterly	279	279
Webster	1908-12	Lake Street and Thompson's Road to Connecticut line	Southerly	1,772	1,772
Webster	1911	Oxford	Southerly	831	831
Wellesley	1901	Natick line to Blossom Street	Easterly	1,176	1,176
Wellesley	1903-4-5-7-15	Eastham line to Truro line	Northerly and northwesterly	7,366	7,366
Wenham	1897-1901-3	Beverly line to Hamilton line	Northerly	1,762	1,762
Westborough	1903-6	Southborough line	Southerly	2,277	2,277
Westborough	1897	Northborough line	Southerly	714	714
West Boylston	1897-8-1913-15	Worcester line to Sterling line	Northerly	4,303	4,303
West Brookfield	1900-1-2-4	Brookton line to Bridgewater line	Southerly	3,161	3,161
West Brookfield	1899	Ware line to Ware line	Southerly	151	151
West Brookfield	1899-1900-1	Brookfield line	Northwesterly	1,506	1,506
West Brookfield	1905-13	Warren line	Easterly	1,172	1,172
Westfield	1894-6-8-9	West Springfield line	Westerly	2,220	2,220
Westfield	1898-9-1900-1-2	Russell line	Easterly	3,584	3,584
Westford	1902-12	Littleton line to Chelmsford line	Northerly and southwesterly	4,150	4,150
Westford	1903	Minot's Corner to Westford Village	Northerly	799	799
Westminster	1894-5-6-7-8-9-1918	Fitchburg line to Gardner line	Southwesterly	5,755	5,755
Westminster	1915	Fitchburg line to Ashburnham line	Northwesterly	2,268	2,268
West Newbury	1895-6-7-1903-4-5-6-9	Newbury line to Stony Brook	Westerly	5,105	5,105
Weston	1898-9	Wayland line to Groveland line	Easterly	3,152	3,152
Westport	1894-6-7-8-1903	Dartmouth line to Fall River	Westerly and southeasterly	4,670	4,670
West Springfield	1895-6-1905-6-12-13	Westfield line	Easterly	2,704	2,704
West Tisbury	1895-6-7-1904	Tisbury line to Chilmark line	Southerly	5,358	5,358
Westwood	1899-1900-13-16	Norwood line to Dedham line	Northerly	1,071	1,071
Weymouth	1894	Holbrook line to Abington line	Easterly	248	248
Weymouth	1895-6-7	Fore River line to Back River	Easterly	1,780	1,780
Weymouth	1903-4-7-8-10	Broad Street via Washington to Abington line	Southerly	4,937	4,937
Weymouth	1915	Hingham line	Northwesterly	2,150	2,150
Whately	1899-1901-2-3-4-5-6	Deerfield line to Hatfield line	Southerly	4,026	4,026
Whitman	1894-5-6	Brookton line	Easterly	1,697	1,697
Whitman	1913-14	East Bridgewater line to Abington line	Northerly	2,293	2,293
Williamstown	1894-5-6-1901-3-4-13	Springfield line to Palmer line	Easterly	5,055	5,055
Williamstown	1896-8-1901-3-16	Goshen line	Southeasterly	2,680	2,680
Williamstown	1907	River Road from village	Southerly	133	133
Williamstown	1895-6-8-1903	North Adams line	Westerly	1,465	1,465
Williamstown	1917	Pownal line	Southeasterly	1,197	1,197

61,045 89

13,976 16

42,951 16

22,646 11

6,900 36

36,999 64

13,258 85

22,570 37

69,241 51

16,439 39

32,765 34

46,047 77

14,422 98

65,868 73

58,726 45

16,212 44

47,746 81

32,944 46

30,095 76

8,080 05

64,722 35

39,175 24

48,539 03

54,966 34

34,088 22

72,998 16

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Concluded.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length con- structed to Dec 1, 1920. (Miles).
		From —	Direction.	Length (Miles).	
Wilmington	1907-8-10-11	Tewksbury line to Woburn line	Southerly	3.678	\$37,946 87
Winchendon	1907	Glen Allen Road via Maple Street	Southwesterly	1.347	
Winchendon	1907	Miller's River Bridge, River Street	Southwesterly	.352	10,045 97
Winchendon	1916	Ashburnham line	Northwesterly	3.164	
Winchendon	1919	New Hampshire line	Southerly	2.493	15,475 81
Winchester	1899-1900	Abington line to Woburn line	Northeasterly	1.952	
Windsor	1897-1902-3-6-7-13-15	Cummington line	Westerly	4.903	163,452 74
Windsor	1919	Dalton line	Northeasterly	1.600	
Woburn	1920	Reading line	Southerly	1.552	69,424 30
Woburn	1900-1-2	Winchester line to Burlington line	Northwesterly	2.033	
Woburn	1912-13	Wilmington line	Southwesterly	.982	47,401 85
Woburn	1915-16-17	Lexington line	Northwesterly	2.471	
Worcester	1896-7	Paxton line	Southwesterly	1.356	97,352 46
Worcester	1897-1903	Holden line	Southerly	1.500	
Worcester	1900-5	West Boylston line	Southerly	1.216	38,156 69
Wrentham	1897-8-9-1900-2-14	Plainville line to Norfolk line	Northerly	4.927	
Wrentham	1912-13	Franklin line	Southwesterly	2.041	97,352 46
Wrentham	1915	Foxborough	Southwesterly	2.549	
Yarmouth, North	1894-5-6	Barnstable line to Dennis	Easterly	3.716	5,082
Yarmouth, South	1895-6-7	Barnstable line to Bass River Bridge	Easterly	5.082	

THE NUMBER OF PETITIONS RECEIVED FOR STATE HIGHWAYS AND THE LENGTH PETITIONED FOR, THE LAYOUTS MADE AND THEIR LENGTH AND DISTRIBUTION IN THE VARIOUS COUNTIES OF THE COMMONWEALTH, 1894-1920, INCLUSIVE.

COUNTIES.	PETITIONS RECEIVED.				PETITIONS SITUATED IN —			LAYOUTS MADE IN —			Number of Layouts
	County.	City.	Town.	Totals.	City.	Town.	Totals.	City.	Town.	Totals.	
Barnstable . . . . .	5	—	59	64	—	16	16	—	17	17	136
Berkshire . . . . .	18	12	63	93	2	31	33	2	23	25	148
Bristol . . . . .	5	8	55	68	3	19	22	3	16	19	129
Dukes . . . . .	3	—	6	9	—	6	6	—	6	6	29
Essex . . . . .	10	28	62	100	8	26	34	10	23	33	172
Franklin . . . . .	2	—	63	65	—	18	18	—	16	16	115
Hampden . . . . .	4	6	36	46	3	17	20	2	13	15	93
Hampshire . . . . .	2	7	55	64	1	18	19	1	16	17	101
Middlesex . . . . .	18	30	115	163	11	46	57	10	40	50	221
Nantucket . . . . .	—	—	1	1	—	1	1	—	1	1	14
Norfolk . . . . .	4	7	76	87	1	26	27	1	24	25	118
Plymouth . . . . .	—	8	72	80	1	27	28	1	21	22	155
Suffolk . . . . .	—	8	2	10	3	1	4	3	—	3	10
Worcester . . . . .	2	9	174	185	3	59	62	3	55	58	312
Totals . . . . .	73	123	839	1,035	36	311	347	36	271	307	1,753

NUMBER OF PETITIONS RECEIVED, ETC. — *Concluded.*

COUNTIES.	Lengths petitioned for (Miles).	LENGTHS LAID OUT.		
		1894-1919.	1920.	TOTALS.
		Miles.	Miles.	Miles.
Barnstable . . . . .	158.37	133.098	2.708	135.806
Berkshire . . . . .	189.69	128.511	5.779	134.290
Bristol . . . . .	174.41	93.761	—	93.761
Dukes . . . . .	29.43	23.021	—	23.021
Essex . . . . .	241.15	105.834	5.845	111.679
Franklin . . . . .	140.48	92.908	—	92.908
Hampden . . . . .	141.84	68.932	4.060	72.992
Hampshire . . . . .	113.74	66.029	7.135	73.164
Middlesex . . . . .	373.09	156.985	9.112	166.097
Nantucket . . . . .	6.47	6.479	—	6.479
Norfolk . . . . .	196.44	78.037	0.327	78.364
Plymouth . . . . .	223.38	135.311	—	135.311
Suffolk . . . . .	14.23	7.376	—	7.376
Worcester . . . . .	403.37	215.512	7.201	222.713
Totals . . . . .	2,406.09	1,311.794	42.167	1,353.961

## CONTRACT PRICES ON STATE

TOWN OR CITY.	Contractor.	EXCAVATION.			CONCRETE MASONRY.		BITUMINOUS SURFACING.			Cement Concrete Surfacing (Cubic Yard).
		Earth (Cubic Yard).	Borrow (Cubic Yard).	Ledge (Cubic Yard).	Plain Concrete Masonry (Cubic Yard).	Reinforced Concrete Masonry (Cubic Yard).	Bituminous Concrete (Ton).	Asphalt (Gallon).	Tar (Gallon).	
Acton and Littleton	Geo. E. Greenough .	\$1 90	\$1 90	\$5 00	\$25 00	-	-	\$0 29	-	-
Agawam . .	Lane Construction Corporation.	1 90	2 00	-	-	-	-	-	\$0 23	-
Andover . .	Geo. T. Seabury, Inc. .	2 45	2 25	8 00	-	-	-	30	-	-
Attleboro . .	Lane Construction Corporation.	2 00	2 00	-	-	-	-	26	-	-
Barre . . .	G. Louis Burnham .	1 19	1 00	4 00	25 00	-	-	-	-	-
Billerica . .	James H. Fannon .	1 75	1 75	6 00	30 00	\$40 00	-	-	-	\$16 00
Canton . . .	Geo. T. Seabury, Inc. .	1 95	1 95	10 00	35 00	40 00	-	26	-	-
Cohasset . .	Wm. A. Jones .	2 50	2 00	3 00	35 00	-	-	22	-	-
Danvers and Peabody	Hamlin & Nelson .	1 45	1 45	4 00	25 00	31 00	-	27	-	-
Danvers . .	Welch & Moynihan .	1 90	2 10	1 00	-	-	-	31	-	-
Dracut . . .	Antonio Pallatto .	1 95	2 75	5 00	-	-	-	-	-	-
Dudley . . .	C. Bianchi & Co. .	1 80	1 60	6 50	30 00	45 00	-	-	-	13 75
Eastham and Wellfleet	Thomas & Murphy .	2 00	2 00	-	50 00	-	\$10 93	25	-	-
Egremont . .	Lane Construction Corporation.	2 00	2 50	5 00	30 00	-	-	-	27	-
Holyoke . . .	D. O'Connell's Sons .	2 50	2 00	6 50	25 00	40 00	-	-	22	-
Huntington . .	Cordner & Montague .	1 35	2 00	5 00	20 00	-	-	-	20	-
Kingston . .	Lane Construction Corporation.	2 25	1 50	6 00	30 00	-	-	27	-	-
Leicester . .	John McDonald Construction Company.	1 20	2 00	10 00	15 00	20 00	-	-	-	16 90
Leicester . .	McGuire & McGurty, Inc.	1 45	2 90	-	-	-	-	-	22	12 75
Lexington . .	Hanscom Construction Company.	1 90	2 25	8 00	50 00	-	-	30	-	-
Littleton . .	Framingham Construction and Supply Company.	1 70	2 50	3 00	24 00	-	-	23	-	-
Milford . . .	Cenedella & Co. .	2 00	3 50	6 00	25 00	30 00	-	22	-	-
Oxford . . .	Hassam Paving Company.	1 80	2 00	6 00	25 00	35 00	-	-	25	-
Palmer . . .	C. Bianchi & Co., Inc.	2 25	2 25	-	-	-	-	-	28	17 75
Princeton . .	C. Bianchi & Co., Inc.	2 00	2 75	4 00	35 00	-	-	-	28	-
Salisbury . .	James E. Watkins .	1 90	2 10	5 00	18 00	-	11 75	28	-	-
Saugus, Lynnfield, Peabody and Danvers.	Hassam Paving Company.	1 90	1 90	5 00	25 00	35 00	-	29	-	14 25
Shrewsbury . .	Alex. Palladino .	1 70	1 85	-	-	-	-	28	-	-
Southwick . .	Lane Construction Corporation.	2 00	2 00	6 00	-	35 00	-	-	23	-
Sterling . . .	Federal Construction Company.	2 25	-	5 00	40 00	-	-	-	-	-
Ware . . .	Luigi Carchia .	2 00	2 00	6 00	35 00	35 00	-	-	20	-

## HIGHWAY CONSTRUCTION IN 1920.

BROKEN STONE.		PIPE CULVERTS (LINEAL FOOT).							Fencing (Lineal Foot).	Stone Filling (Cubic Yard).	Bounds (Each).	Catch Basins (Each).
Local (Ton).	Trap (Ton).	CLAY.			CORRUGATED IRON.							
		Ten-inch.	Twelve-inch.	Fifteen-inch.	Twelve-inch.	Fourteen-inch.	Sixteen-inch.	Eighteen-inch.				
\$3 80	\$5 60	-	\$2 00	-	-	-	-	-	\$0 80	-	-	\$100 00
-	4 15	-	-	-	-	-	-	\$4 00	-	\$4 75	-	-
-	4 90	\$3 00	3 40	-	-	-	-	-	-	-	\$7 00	100 00
-	4 90	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	\$3 00	-	4 00	-	-	-	-
-	-	-	3 00	-	-	-	-	-	1 00	-	4 00	100 00
-	4 70	-	-	-	\$3 00	-	\$3 50	-	1 00	3 50	-	100 00
-	4 88	-	-	-	2 05	-	2 65	-	-	1 25	-	60 00
3 35	-	1 35	1 50	\$1 70	-	-	-	-	70	-	4 00	-
3 25	-	2 00	-	-	-	-	-	-	1 00	-	-	85 00
3 40	-	-	-	-	-	-	-	-	1 00	-	-	-
-	-	-	-	-	3 00	-	-	-	1 00	-	6 50	-
-	-	-	-	-	5 00	-	-	-	-	-	-	-
-	5 50	-	-	-	2 50	-	-	3 75	95	3 50	5 00	-
-	4 50	-	-	-	3 50	-	-	4 50	80	3 50	-	-
-	4 60	-	2 00	-	2 00	-	-	-	75	3 50	4 00	-
-	5 75	-	-	-	2 50	-	-	-	95	-	5 00	100 00
-	-	-	-	-	1 75	-	-	2 45	1 30	-	20 00	100 00
3 75	-	-	-	-	-	-	-	-	-	1 15	-	100 00
-	4 20	-	-	-	-	-	-	-	1 00	-	-	-
-	5 50	-	2 00	-	-	-	-	-	80	-	-	-
-	4 90	-	3 50	-	-	-	-	-	1 00	-	-	-
-	5 45	-	-	-	4 00	-	-	-	1 00	2 60	5 00	-
-	4 50	-	2 00	-	-	-	-	-	-	-	-	75 00
3 75	-	-	-	-	2 75	-	-	4 00	1 00	2 75	-	-
3 90	-	1 90	-	-	5 00	-	-	-	1 00	-	-	100 00
4 00	-	2 00	2 25	2 65	-	-	-	-	85	-	4 50	100 00
-	3 90	-	-	-	-	-	-	-	-	-	-	-
4 50	-	-	-	-	3 00	-	-	4 50	1 00	3 50	-	-
-	-	-	-	-	-	-	-	-	1 00	-	-	-
-	4 50	-	2 00	-	2 25	-	2 50	3 00	-	2 25	3 00	50 00



## CONTRACT PRICES ON STATE

TOWN OR CITY.	Contractor.	EXCAVATION.			CONCRETE MASONRY.		BITUMINOUS SURFACING.			Cement Concrete Surfacing (Cubic Yard).
		Earth (Cubic Yard).	Borrow (Cubic Yard).	Ledge (Cubic Yard).	Plain Concrete Masonry (Cubic Yard).	Reinforced Concrete Masonry (Cubic Yard).	Bituminous Concrete (Ton).	Asphalt (Gallon).	Tar (Gallon).	
Warwick . .	F. B. Saunders . .	\$1 75	\$1 25	\$10 00	\$18 00	\$26 25	-	-	-	-
Wayland . .	J. H. McCusker . .	1 50	2 00	5 00	-	-	-	\$0 30	-	-
Westfield . .	Lane Construction Corporation.	1 60	1 60	5 00	35 00	-	-	-	\$0 23	-
Westfield . .	Lane Construction Corporation.	1 75	1 75	3 00	-	-	-	-	23	-
West Springfield .	Middlesex Construction Company.	1 50	-	-	40 00	-	-	-	25	\$16 00
Westwood . .	A. J. Mitchell . .	2 00	2 00	5 00	30 00	-	-	22½	-	-

HIGHWAY CONSTRUCTION IN 1920 — *Concluded.*

BROKEN STONE.		PIPE CULVERTS (LINEAL FOOT).							Fencing (Lineal Foot).	Stone Filling (Cubic Yard).	Bounds (Each).	Catch Basins (Each).
Local (Ton).	Trap (Ton).	CLAY.			CORRUGATED IRON.							
		Ten-inch.	Twelve-inch.	Fifteen-inch.	Twelve-inch.	Fourteen-inch.	Sixteen-inch.	Eighteen-inch.				
-	-	-	-	-	\$1 46	\$1 60	-	-	\$0 95	-	-	-
-	\$4 25	-	-	-	-	-	-	-	85	-	-	-
\$3 50	-	-	-	-	2 50	-	\$3 50	-	90	\$4 25	-	-
3 50	-	-	-	-	2 50	-	-	-	-	4 25	-	-
-	4 25	-	-	-	-	-	-	-	-	-	-	-
4 45	-	-	-	-	-	-	-	-	90	-	-	\$75 00

## CARE OF SHADE TREES ON STATE HIGHWAYS.

*List of Towns and Cities in which Work has been done by the State Forester's Department in cleaning and spraying Trees on State Highways for suppressing Gypsy and Brown-tail Moths and Elm-leaf Beetles, and the Amount expended in Each Municipality during the Year.*

TOWN.	Amount.	TOWN.	Amount.
Abington . . . . .	\$105 80	Dracut . . . . .	\$126 74
Acton . . . . .	53 29	Duxbury . . . . .	70 44
Amesbury . . . . .	58 56	East Bridgewater . . . . .	50 00
Andover . . . . .	102 08	Essex . . . . .	28 60
Ashburnham . . . . .	129 00	Falmouth . . . . .	227 71
Ashby . . . . .	19 29	Fitchburg . . . . .	85 78
Ashland . . . . .	77 92	Foxborough . . . . .	130 50
Attleboro . . . . .	67 00	Framingham . . . . .	82 29
Avon . . . . .	13 50	Franklin . . . . .	67 00
Ayer . . . . .	19 15	Freetown . . . . .	121 00
Barnstable . . . . .	274 95	Gloucester . . . . .	73 10
Bedford . . . . .	49 20	Grafton . . . . .	65 60
Bellingham . . . . .	27 00	Groton . . . . .	6 00
Berkley . . . . .	67 00	Groveland . . . . .	74 05
Beverly . . . . .	124 30	Hamilton . . . . .	148 08
Billerica . . . . .	89 94	Hanover . . . . .	75 00
Blackstone . . . . .	22 74	Harvard . . . . .	46 88
Bourne . . . . .	118 12	Harwich . . . . .	100 60
Boxborough . . . . .	37 29	Haverhill . . . . .	176 37
Braintree . . . . .	125 00	Hingham . . . . .	66 59
Brewster . . . . .	92 32	Holbrook . . . . .	59 20
Bridgewater . . . . .	66 05	Holliston . . . . .	99 52
Brockton . . . . .	11 00	Hudson . . . . .	18 04
Burlington . . . . .	119 98	Ipswich . . . . .	64 55
Canton . . . . .	61 80	Lakeville . . . . .	209 58
Chatham . . . . .	59 00	Lancaster . . . . .	24 80
Chelmsford . . . . .	131 07	Leominster . . . . .	55 32
Cohasset . . . . .	24 29	Lexington . . . . .	120 00
Concord . . . . .	30 29	Lincoln . . . . .	30 29
Danvers . . . . .	15 47	Littleton . . . . .	19 15
Dedham . . . . .	50 00	Lowell . . . . .	90 10
Dennis . . . . .	101 80	Lunenburg . . . . .	83 50
Dighton . . . . .	175 00	Mansfield . . . . .	101 98
Dover . . . . .	197 88	Marlborough . . . . .	41 44

*List of Towns and Cities in which Work, etc. — Concluded.*

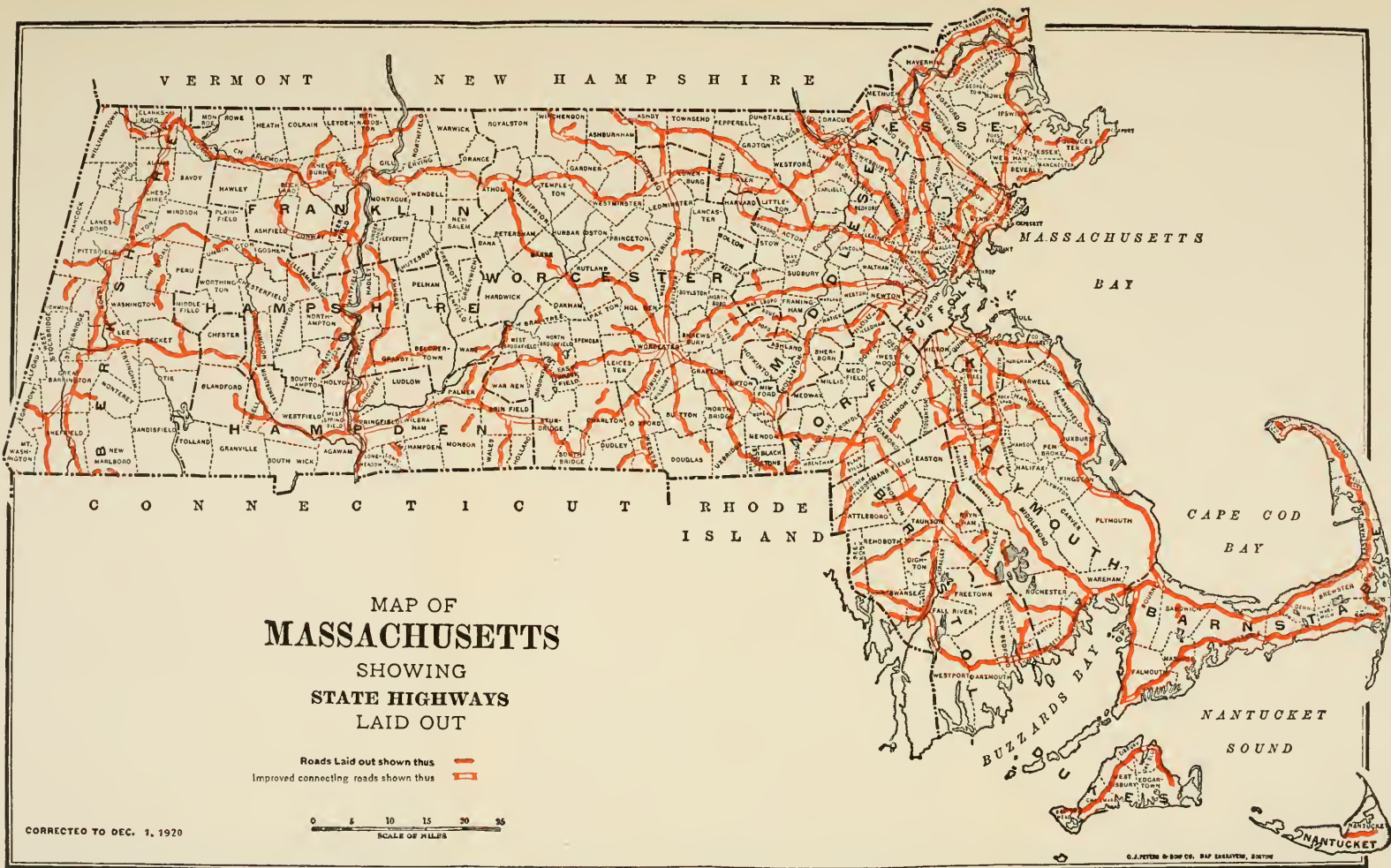
TOWN.	Amount.	TOWN.	Amount.
Marshfield . . . . .	\$162 81	Sheffield . . . . .	\$50 00
Mashpee . . . . .	137 50	Shirley . . . . .	54 25
Melrose . . . . .	62 40	Shrewsbury . . . . .	39 40
Merrimac . . . . .	38 50	Somerset . . . . .	216 00
Methuen . . . . .	127 16	Somerville . . . . .	11 00
Middleborough . . . . .	107 16	Southborough . . . . .	96 47
Middleton . . . . .	16 91	Sterling . . . . .	121 56
Millville . . . . .	22 74	Stoneham . . . . .	101 32
Milton . . . . .	11 00	Stoughton . . . . .	146 00
Natick . . . . .	53 32	Sudbury . . . . .	38 04
Needham . . . . .	95 54	Swansea . . . . .	229 00
Newbury . . . . .	71 01	Taunton . . . . .	134 00
Newburyport . . . . .	39 18	Templeton . . . . .	18 75
Norfolk . . . . .	25 80	Tewksbury . . . . .	130 75
North Andover . . . . .	188 10	Townsend . . . . .	19 29
North Attleborough . . . . .	108 00	Truro . . . . .	105 00
North Reading . . . . .	72 00	Tyngsborough . . . . .	170 75
Northborough . . . . .	242 26	Uxbridge . . . . .	45 47
Norton . . . . .	207 60	Walpole . . . . .	214 00
Norwood . . . . .	95 45	Wareham . . . . .	113 23
Orleans . . . . .	97 65	Wayland . . . . .	59 29
Pembroke . . . . .	109 00	Wellfleet . . . . .	28 20
Pepperell . . . . .	61 79	Wenham . . . . .	129 41
Plainville . . . . .	77 50	West Boylston . . . . .	66 92
Plymouth . . . . .	180 46	West Bridgewater . . . . .	50 50
Princeton . . . . .	6 50	West Newbury . . . . .	143 26
Randolph . . . . .	108 00	Westborough . . . . .	55 79
Raynham . . . . .	54 00	Westford . . . . .	175 40
Reading . . . . .	135 12	Westminster . . . . .	72 61
Rehoboth . . . . .	162 00	Weston . . . . .	39 28
Rochester . . . . .	7 33	Westwood . . . . .	33 97
Rockland . . . . .	71 45	Weymouth . . . . .	221 63
Rockport . . . . .	12 70	Wilmington . . . . .	80 52
Rowley . . . . .	108 13	Winchendon . . . . .	36 75
Salisbury . . . . .	166 59	Winchester . . . . .	73 50
Sandwich . . . . .	85 58	Woburn . . . . .	251 03
Scituate . . . . .	111 87	Wrentham . . . . .	216 00
Seekonk . . . . .	54 00	Yarmouth . . . . .	149 67
Sharon . . . . .	11 00	Total . . . . .	\$13,000 00

STATEMENT OF CLAIMS AGAINST THE DEPARTMENT OF PUBLIC WORKS,  
DIVISION OF HIGHWAYS.

[As required by section 5, chapter 18 of the Revised Laws.]

NAME.	Residence.	Nature of Claim.
Beman, Richard D.	Becket . . .	Damage due to accident alleged to have occurred on State highway in Becket.
Boudreau, William . .	Wilmington . .	Damage due to accident alleged to have occurred on State highway in Wilmington.
Bray, Lizzie A. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Carroll, Mary, and Mary A. Finn.	Northbridge . .	Damages due to construction of State highway in Northbridge.
Clifford, John A. . . .	Salisbury . . .	Damages due to construction of State highway in Salisbury.
Coleman, John H. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Farnum, Elizabeth M. .	Uxbridge . . .	Damages due to construction of State highway in Uxbridge.
Flagg, Lucretia T. . . .	Northampton . .	Damages due to construction of State highway in Northampton.
Fuller, Reuben H. . . .	Mashpee . . .	Damages due to construction of State highway in Mashpee.
Garr, Craig . . . . .	Northbridge . .	Damages due to construction of State highway in Northbridge.
Goward, Louis B., and Florence E.	Taunton . . .	Damages due to construction of State highway in Taunton.
Haskell, Edith L. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Ireson, Jennie E. . . .	Wrentham . . .	Damages due to construction of State highway in Wrentham.
Jacques, Rose . . . .	Grafton . . .	Damages due to construction of State highway in Grafton.
Kneisel, Joseph . . . .	Dedham . . .	Damages due to construction of State highway in Dedham.
Lemon, Elizabeth . . . .	Spencer . . .	Damage due to accident alleged to have occurred on State highway in Spencer.
Lemcn, Solomon . . . .	Spencer . . .	Damage due to accident alleged to have occurred on State highway in Spencer.
McGee, John P. . . . .	Marlborough . .	Damages due to construction of State highway in Marlborough.
Moran, James . . . . .	West Boylston . .	Damages due to construction of State highway in West Boylston.
Moran, Mary E. . . . .	West Boylston . .	Damages due to construction of State highway in West Boylston.
Paine, Sarah E. . . . .	Revere . . . .	Damage due to accident alleged to have occurred on the State highway in Revere.
Parker, Frank C. . . . .	Becket . . . .	Damage due to accident alleged to have occurred on the State highway in Becket.
Proctor, George W. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Ray, Foster S. . . . .	Charlton . . .	Damages due to construction of State highway in Charlton.
Remington, Mary A. . . .	Great Barrington .	Damages due to construction of State highway in Great Barrington.
Roberts, William H. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Sampson, Frances A. . . .	Plymouth . . .	Damages due to construction of State highway in Plymouth.
Scott, Hugh C. . . . .	Norton . . . .	Damages due to construction of State highway in Norton.
Snow, Frank E. . . . .	Wrentham . . .	Damages due to construction of State highway in Wrentham.
Taft, Kate P. . . . .	Northampton . .	Damages due to construction of State highway in Northampton.
Tribou, E. Harry . . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Wade, Julia A. . . . .	Lee . . . . .	Damages due to construction of State highway in Lee.
White, Emma A., <i>et al.</i> . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
York, Addie A. . . . .	Wrentham . . .	Damages due to construction of State highway in Wrentham.







## REGISTRY OF MOTOR VEHICLES.

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### MOTOR VEHICLE DEATHS, INJURIES, COLLISIONS.

One of the great questions pressing the American people for solution is how to reduce accidents resulting from motor vehicle collisions.

During the past year in Massachusetts the Registry entered upon a safety campaign, and through its offices the Safe Roads Federation was organized, made up of representatives from various civic bodies throughout the Commonwealth, as well as insurance companies, automobile dealers and allied interests.

As the result of great activity on the part of these organizations, aided by the police and the Registry, the number of persons killed in the Commonwealth during the year 1920 was 102 less than were killed the year before, notwithstanding the fact that there were some 54,000 more automobiles on the highways in 1920 than there were in 1919.

The number of persons injured increased, indicating that while serious accidents were reduced minor accidents increased, and after analyzing these accidents it was determined by the Registry to be necessary to make every person pass an examination before receiving a license to operate motor vehicles. This drastic change in the law will be put into effect Dec. 1, 1920, and it is expected that the result will be a great reduction in minor accidents for the year 1921.

The following tables are a comparison of the accidents in which motor vehicles were involved during the years 1919 and 1920: —

## NUMBER OF PERSONS KILLED AND INJURED.

	KILLED.		INJURED.	
	1919.	1920.	1919.	1920.
Pedestrians . . . . .	379	315	5,719	7,731
Occupants of autos . . . . .	160	114	8,712	11,055
Occupants of carriages . . . . .	1	1	541	344
Motorecycle riders . . . . .	25	28	677	870
Bicycle riders . . . . .	17	12	622	868
Pedestrians near street cars . . . . .	—	10	10	218
Totals . . . . .	582	480	16,281	21,086

## NUMBER OF COLLISIONS.

	1919.	1920.
Autos v. pedestrians . . . . .	6,119	7,118
Autos v. autos . . . . .	11,433	12,297
Autos v. motorcycles . . . . .	10	396
Autos v. bicycles . . . . .	712	850
Autos v. carriages . . . . .	829	639
Autos v. pole, curb, etc. . . . .	1,169	1,338
Autos v. trolleys . . . . .	918	790
Autos v. trains . . . . .	44	39
Totals . . . . .	21,304	23,467
In the daytime . . . . .	17,366	19,105
After dark . . . . .	3,938	4,362
Totals . . . . .	21,304	23,467

## CHILDREN KILLED AND INJURED IN 1920.

Killed, . . . . .	190
Injured, . . . . .	2,101

## LICENSES SUSPENDED AND REVOKED.

The statements following show the action taken by the Registrar and the causes therefor: —

## NUMBER OF LICENSES SUSPENDED AND REVOKED, FISCAL YEARS 1919 AND 1920.

DATE.	1919.			DATE.	1920.		
	Liquor.	Other Causes.	Total.		Liquor.	Other Causes.	Total.
<b>1918.</b>				<b>1919.</b>			
December . . . . .	52	132	184	December . . . . .	42	80	122
<b>1919.</b>				<b>1920.</b>			
January . . . . .	39	92	131	January . . . . .	28	84	112
February . . . . .	34	90	124	February . . . . .	12	32	44
March . . . . .	26	61	87	March . . . . .	9	31	40
April . . . . .	48	123	171	April . . . . .	31	58	89
May . . . . .	45	274	372	May . . . . .	46	312	427
June . . . . .	53			June . . . . .	69		
July . . . . .	69	188	257	July . . . . .	100	237	337
August . . . . .	38	134	172	August . . . . .	119	231	350
September . . . . .	60	184	244	September . . . . .	134	290	424
October . . . . .	55	187	242	October . . . . .	132	317	449
November . . . . .	35	137	172	November . . . . .	166	384	550
Totals . . . . .	554	1,602	2,156	Totals . . . . .	888	2,056	2,944

## NUMBER OF LICENSES SUSPENDED AND REVOKED ACCORDING TO NATURE OF OFFENCES.

	1919.	1920.
Recklessness . . . . .	339	406
Liquor . . . . .	554	888
Refusing to stop . . . . .	66	96
Taking car without authority . . . . .	137	70
Improper person . . . . .	186	449
Improper operating . . . . .	223	323
Two overspeedings . . . . .	—	105
Three overspeedings . . . . .	11	11
Deaths . . . . .	506	411
Operating truck or for hire on operator's license . . . . .	—	42
Other offences . . . . .	134	143
Totals . . . . .	2,156	2,944



## INVESTIGATIONS AND PROSECUTIONS BY INSPECTORS.

The following table furnishes a classification and summary of the work of the inspectors other than examination work, together with comparative figures for the preceding year:—

	1919.	1920.
Total reports received from inspectors . . . . .	2,058	1,522
Itemized as follows:—		
Accidents, fatal . . . . .	532	480
Accidents, non-fatal . . . . .	307	316
Accidents, brief reports . . . . .	456	230
General reputation . . . . .	249	223
Miscellaneous . . . . .	296	273
	2,058	1,522
Prosecutions (miscellaneous offences) . . . . .	189	52
Prosecutions (operating with dazzling lights) . . . . .	342	24
	531	76
Fines for miscellaneous offences . . . . .	\$4,810	\$1,753
Fines for dazzling lights . . . . .	2,321	240
	\$7,131	\$1,993

## COMPARISON OF ABSTRACTS OF COURT RECORDS, FISCAL YEARS 1919 AND 1920.

	1919.	1920.
Number of courts that have forwarded abstracts . . . . .	91	94
Number of abstracts received . . . . .	14,212	29,056
<i>Disposition of Cases.</i>		
Persons guilty of operating unlawfully . . . . .	12,372	19,086
Persons not guilty of operating unlawfully . . . . .	492	704
Cases appealed to a higher court . . . . .	825	1,093
Complaints placed on file . . . . .	3,926	5,710
Complaints nol-prossed . . . . .	344	182
Probation . . . . .	201	332
Persons committed to imprisonment . . . . .	439	331
Defendants defaulted . . . . .	14	46

COMPARISON OF ABSTRACTS OF COURT RECORDS, FISCAL YEARS 1919 AND 1920 — *Concluded.*

	1919.	1920.
<i>Offences.</i>		
For overspeeding . . . . .	4,195	6,593
For reckless operating . . . . .	194	192
For operating while intoxicated . . . . .	788	992
For using automobile without authority . . . . .	286	164
For endangering lives and safety of the public . . . . .	357	419
For failing to stop after causing injury . . . . .	139	156
For operating without a license . . . . .	1,657	2,321
For operating without carrying registration certificate . . . . .	667	1,347
For operating an unregistered motor vehicle . . . . .	323	406
For improper display or no register number . . . . .	354	536
For refusing to stop when signaled by officer . . . . .	336	589
For operating with unlighted lamps . . . . .	1,682	1,549
For failing to give signal when approaching intersecting way . . . . .	1,283	3,163
For operating with dazzling lights . . . . .	658	148
For operating within 8 feet of street car . . . . .	300	318
For violating metropolitan park rules . . . . .	236	423
For miscellaneous offences . . . . .	1,141	2,612
For operating after license suspended or revoked . . . . .	36	43
For larceny of motor vehicles . . . . .	339	53
For manslaughter . . . . .	32	34

## FINES PAID, AS REPORTED BY STATE AUDITOR.

	1919.	1920.
For violations of the motor vehicle law . . . . .	\$104,924 94	\$146,453 04

## EXAMINATIONS.

During the past year the number of examining points has been very largely increased. Heretofore examinations were held in only 11 of the larger cities of the Commonwealth. Now they are held in 56 cities and towns. At some of these places examinations are conducted daily, and at other points weekly or fortnightly, according to the season, and as warranted by the number of applications.

The list of examination points follows: —

Athol	Hingham	Norwood
Attleboro	Holyoke	Oak Bluffs
Ayer	Hyannis	Palmer
Boston	Ipswich	Pittsfield
Bridgewater	Lawrence	Plymouth
Brockton	Lowell	Provincetown
Cambridge	Lynn	Quincy
Clinton	Malden	Rockland
Concord	Mansfield	Salem
Fall River	Marlborough	Southbridge
Falmouth	Middleborough	Springfield
Fitchburg	Milford	Taunton
Framingham	Nantucket	Ware
Franklin	New Bedford	Wareham
Gardner	Newburyport	Westfield
Gloucester	Newton (West)	Whitinsville
Great Barrington	North Adams	Woburn
Greenfield	Northampton	Worcester
Haverhill	North Brookfield	

The Inspectors of the Examination and Investigation Section during the year 1920 conducted 39,845 examinations of chauffeurs and private operators. Of the chauffeurs examined, 32,934 passed on the first test and 4,510, or 12 per cent failed. Of the 2,401 operators examined, 403, or 16.7 per cent, were reported as unfit. The total number of "minor operators," or persons between sixteen and eighteen years of age, examined was 1,938. Of these minor operators the percentage of failure in the examination was 15.2 per cent. There were 78 operators having physical infirmity which were examined; 21, or 26.9 per cent, of these were reported unfit. There were also 50 persons examined for the reinstatement of their licenses. It is significant that 24, or 48 per cent, of these failed to pass.

The following table shows a comparison of examinations conducted during the fiscal years 1918, 1919 and 1920: —

	1918.	1919.	1920.
Total examinations . . . . .	17,388	19,107	39,845
Chauffeurs examined . . . . .	17,203	18,882	37,444
Chauffeurs unfit . . . . .	3,386	3,499	4,510
Operators examined . . . . .	185	225	2,401
Operators unfit . . . . .	61	66	403
Physical infirmity . . . . .	—	—	78
Physical infirmity, unfit . . . . .	—	—	21
For reinstatement . . . . .	—	—	50
For reinstatement, unfit . . . . .	—	—	24

#### PERSONNEL OF THE EXAMINING AND INVESTIGATING SECTION.

The personnel of this section has undergone several changes, several new inspectors having been appointed to fill the vacancies occasioned by resignations, and seven new inspectors having been added on account of increased work, so that the total working force of the section now consists of one chief inspector, twenty-nine inspectors and examiners, five stenographers, and eight clerks, — a total of forty-three.

#### USED-CAR SECTION.

The object of this work is to record transactions involving the transfer of ownership of motor vehicles, showing the continuity of ownership of such vehicles, and keeping records in such a way that when a motor vehicle is reported stolen we may watch for its registration by engine number and prevent further fraud.

On account of lack of space it was not possible to put sufficient employees on the work to complete the files, but the same are well advanced so that early in 1921 there will be on file, according to engine number and make of car for each registered motor vehicle, a record. When a motor vehicle is reported stolen a blue card is written and placed in its numerical order in the file so that, together with the four-day notice required before a car is sold, it is very possible to detect and prevent a transfer of a stolen car, as reports of sale and transfer of motor vehicles by either dealers or individuals are checked up daily with the records of stolen cars on file.

*Reports received.*

Reports have been received at this office from 1,626 dealers. Of this number, 805 were dealers holding agents' licenses who made over 700 weekly reports. Of these, 728 dealers held used-car dealers' licenses, and these dealers were required to make daily reports, such reports averaging 150 a day. The reports from individuals averaged 150 a day, such reports being required except when an individual sells to a first-class dealer or agent.

*Stolen Cars and Recovery.*

Over 1,400 cars have been reported as being stolen, many of these reports coming from States other than Massachusetts. One hundred and seventy-five cars were recovered by this office or through information furnished by this office in 1920. In addition, over 50 cars which had been sold on leases or other conditions, and lost track of, were located for dealers and others requesting assistance in tracing property in which they had an interest.

The work of this section, to be fully successful, must have the co-operation of the police departments throughout the State. The Boston police department, in particular, has assisted in every way, so that it is believed that the so-called "fences" for stolen cars are a thing of the past as a result of the law regulating the purchase and sale of motor vehicles, making it incumbent on dealers and others to report both here and to the police.

## REGISTRATIONS, LICENSES, FEES.

During the year 1920 the registration of all classes of motor vehicles increased over that for 1919, and the increase is clearly shown in the following table: —

## AUTOMOBILES, COMMERCIAL VEHICLES AND MOTOR CYCLES.

	1915.	1916.	1917.	1918.	1919.	1920.	Per Cent Increase, Five Years.
Automobiles . . .	90,580	118,615	145,801	160,486	205,372	251,570	177
Commercial vehicles . .	12,053	18,194	25,505	33,011	41,810	52,968	339
Motor cycles . . .	9,520	10,713	10,956	12,862	13,698	15,142	59



The fees received for the year 1920, together with the number of vehicles registered in each classification and the number of licenses granted, etc., are shown in the following table:—

## ANALYSIS OF RECEIPTS.

## Certificates of registration:

Automobiles (including 52,968 commercial vehicles) . . . . .	304,658	\$3,025,069	50
Motor cycles . . . . .	15,142	32,675	00
Motor cycle dealers . . . . .	43	410	00
Manufacturers or dealers . . . . .	1,961	48,725	00
Manufacturers or dealers, additional cars . . . . .	2,657	17,194	00
Repairers . . . . .	43	385	00

## Licenses to operate:

Operators . . . . .	75,304 at \$2	00	150,608	00
Chauffeurs . . . . .	30,937 at 2	00	61,874	00
Operators' renewals . . . . .	108,593 at 2	00	217,186	00
Operators' renewals . . . . .	97,798 at 1	00	97,798	00
Chauffeurs' renewals . . . . .	41,185 at 2	00	82,370	00
Chauffeurs' renewals . . . . .	7,722 at 1	00	7,722	00
Additional renewal fees . . . . .	13,500 at 1	00	13,500	00
Examinations . . . . .	42,595 at 2	00	85,190	00
Copies of certificates and licenses furnished . . . . .	14,703 at	50	7,351	50
Duplicate automobile number plates . . . . .	6,831 at	75	5,123	25
Duplicate motor cycle number plates . . . . .	409 at	50	204	50
State plates furnished . . . . .	985 at	10	98	50

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Total . . . . .	\$3,853,484	25
Miscellaneous receipts, including interest on deposits . . . . .	6,747	45

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Total fees . . . . .	\$3,860,231	70
Motor vehicle fees rebated (deducted), . . . . .	73,236	96

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Net fees, . . . . .	\$3,786,994	74
Court fines received by the Treasurer and Receiver-General	146,453	04

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Total receipts credited motor vehicle fees account, 1920 \$3,933,448 78

The cost of running the Registry of Motor Vehicles for the year 1920 was \$426,819.88, which was 11.27 per cent of the net fees collected, as compared with 11.48 per cent for the year 1919. This cost, deducted from the receipts of the year, left available

for legislative appropriation for highway work the sum of \$3,506,628.15.

The following table gives an analysis of the expenditures for running the Registry for the year 1920:—

#### EXPENDITURES FOR THE FISCAL YEAR 1920.

##### Personal services:

Regular payroll . . . . .	\$230,890 05	
Overtime . . . . .	14,485 78	
	<hr/>	\$249,375 83

##### Supplies:

Books, maps, etc. . . . .	\$144 00	
Typewriter repairs and supplies . . . . .	2,404 32	
Adding machine supplies . . . . .	77 75	
Other supplies . . . . .	224 54	
Stationery . . . . .	15,347 50	
Guide cards . . . . .	484 65	
	<hr/>	18,682 76

##### Equipment:

Typewriter machines . . . . .	\$1,902 70	
Adding machines . . . . .	1,663 00	
Other machines . . . . .	1,557 54	
	<hr/>	5,123 24

##### Furniture:

Filing cabinets . . . . .	\$321 42	
Electric fans . . . . .	532 80	
Electric wiring . . . . .	330 42	
Miscellaneous . . . . .	543 66	
	<hr/>	1,728 30

##### Traveling expenses:

Employees . . . . .	\$15,300 65	
Automobiles (owned by employees) . . . . .	14,191 56	
Other traveling expenses . . . . .	1,581 16	
	<hr/>	31,073 37

##### Other services as listed below:

Expressage . . . . .	\$356 44	
Postage . . . . .	30,824 73	
Printing . . . . .	26,279 42	
Telephone and telegrams . . . . .	83 99	
Rent (31 Mount Vernon Street) . . . . .	816 67	
Special services (labor and police) . . . . .	1,740 85	
Advertising . . . . .	73 75	
Badges for inspectors . . . . .	113 50	

Other services as listed below — *Concluded.*

Commissions as justices of the peace . . . . .	\$65 00
Number plates . . . . .	60,396 93
Sundries . . . . .	63 25
Towels . . . . .	21 85
	<hr/>
	\$120,836 38
	<hr/>
Total . . . . .	\$426,819 88

The total amount available for 1920 was \$427,395.40.

The following comparative statement for the years 1919 and 1920 shows very plainly the increase of work as occasioned by increased registrations and licenses, etc.: —

	1919.	1920.
Automobile registrations . . . . .	203,364	251,570
Highest number plate assigned . . . . .	177,950	219,717
Commercial registrations . . . . .	43,819	52,968
Highest number plate assigned . . . . .	B41,753	B49,572
Motor cycle registrations . . . . .	13,698	15,142
Highest number plate assigned . . . . .	—	14,508
Motor cycle dealers' registrations . . . . .	31	43
Manufacturers' or dealers' registrations . . . . .	2,465	1,961
Licenses to operate:		
Operators . . . . .	63,530	75,304
Chauffeurs . . . . .	15,358	30,937
Operator renewals . . . . .	161,391	206,391
Chauffeur renewals . . . . .	57,689	48,907
Total licenses . . . . .	297,968	361,539
Examinations . . . . .	19,022	42,595
Copies of certificates and licenses issued . . . . .	11,197	14,703
Duplicate automobile number plates . . . . .	5,451	6,831
Duplicate motor cycle number plates . . . . .	488	409
Fees . . . . .	\$2,652,228 90	\$3,853,484 25
Miscellaneous receipts, including interest on deposits . . . . .	15,624 95	6,747 45
Total fees . . . . .	\$2,667,853 85	\$3,860,231 70
Motor vehicle fees rebated (deducted) . . . . .	36,051 50	73,236 96
Net fees . . . . .	\$2,631,802 35	\$3,786,994 74
Court fines received by the Treasurer and Receiver-General . . . . .	104,924 94	146,453 04
Total receipts credited Motor Vehicle Fees Account . . . . .	\$2,736,727 29	\$3,933,448 78
Personal services . . . . .	\$162,358 39	\$249,375 83
Expenses . . . . .	139,921 70	177,444 05



## DIVISION OF WATERWAYS AND PUBLIC LANDS.

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### BOSTON HARBOR.

#### THE COMMONWEALTH FLATS AT SOUTH BOSTON.

##### *Commonwealth Pier No. 5.*

During the year a considerable amount of repair work has been necessary at this pier. The downspouts have been changed, defects in the roofing remedied, minor alterations made in the heating system and the sashes and steel work repainted.

The downspouts leading from the roof of the head house have given trouble from time to time, and became, during the winter of 1919 and 1920, so defective as to make a change necessary. These downspouts were reconstructed by John Farquhar's Sons, Incorporated, at an expense of \$3,212.

When the heating plant at this pier was installed it was planned so that the heat could be cut off from the passenger accommodations in the central shed if these were not in use. Practically, however, it was found necessary to heat these quarters much of the time to prevent the freezing of the water in the dry valve pits of the sprinkler system. During the year a portion of the records of the Department of Public Works have been moved to rooms in this part of the pier. In order to heat these rooms and the valve pits at all times, and to cut off the passenger quarter when not in use, a new valve has been inserted in the main steam pipe and a smaller pipe run to fit the radiators in the valve pits in the longshoremen's toilets. By this method considerable coal can be saved. As the larger part of the piping required was on hand at the pier, these changes were made at an expense of \$1,251.03.



No general painting has been done at the pier since it was built in 1913. During the year, as in previous years, inspectors and other employees when not needed on their usual work have been occupied in repainting the steel sash and other parts of the steel work. In this way the portions most seriously affected by the weather have been kept painted. At the present time, however, more repainting is required than can be accomplished by such intermittent work. During the coming year the steel work of the pier and the woodwork of the windows and doors of the head house should be repainted.

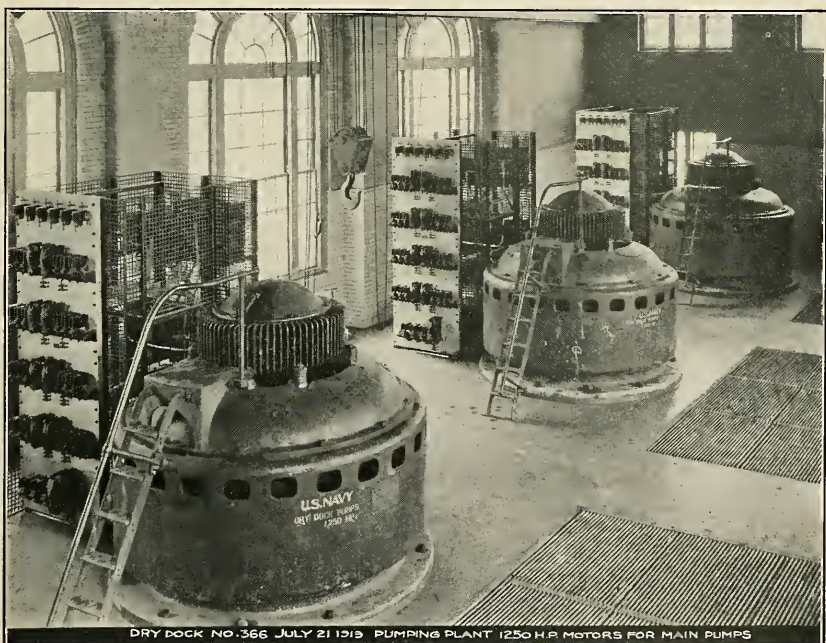
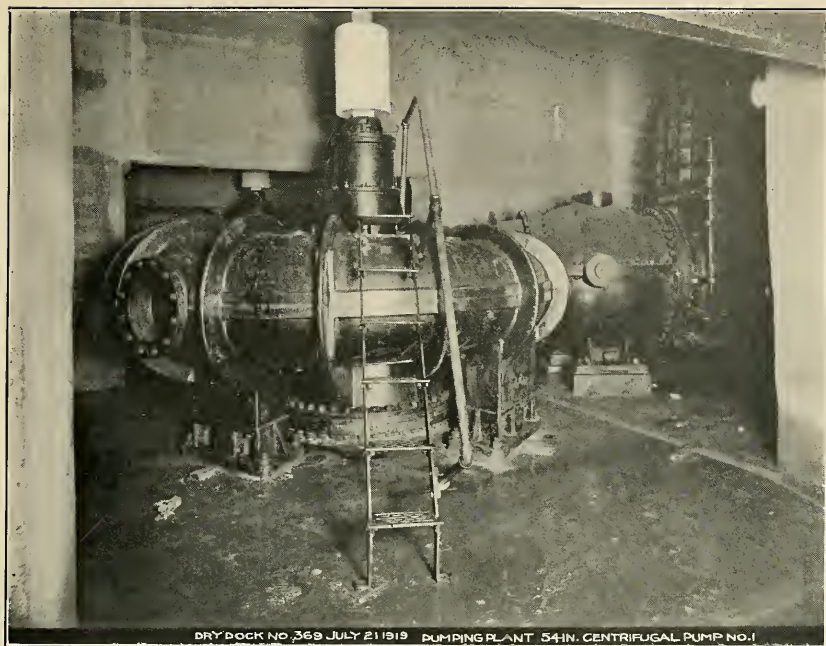
*Commonwealth Pier No. 6.*

When this pier was built and leased to the Boston Fish Market Corporation, the Commonwealth agreed to relay the paving within five years from the date of completion. The five years ended in October, 1918. At that time, however, the prices for doing such work were very high, and a portion of the paving was in fair condition. It was decided, therefore, with the assent of the corporation, to do only a part of the work and to postpone the remainder for a short time. In accordance with this plan a portion of the wharf frontage opposite the main buildings, and a large part of the central street from Northern Avenue to the southerly end of the main buildings, was repaved in the fall of 1918 and the spring of 1919, at a cost of \$57,163.10.

The remainder of the wharf paving is in such poor condition that the corporation is anxious to have it relaid. A part of the central street also needs attention, although the greater portion of it is in fair condition. The estimated cost of completing this repaving at the present time is \$110,000. A recommendation for an appropriation for this work has been included in those submitted for the Governor's budget.

*Dry Dock.*

Under date of April 28, 1920, the Commonwealth of Massachusetts, represented by the Department of Public Works, Division of Waterways and Public Lands, gave to the United States of America a deed of a certain parcel of land, together

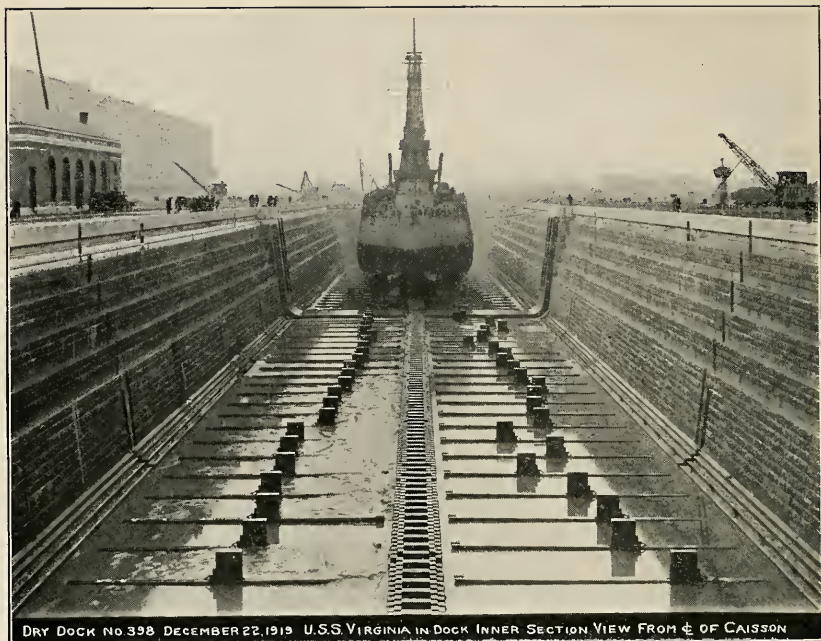


Commonwealth Dry Dock, Boston.

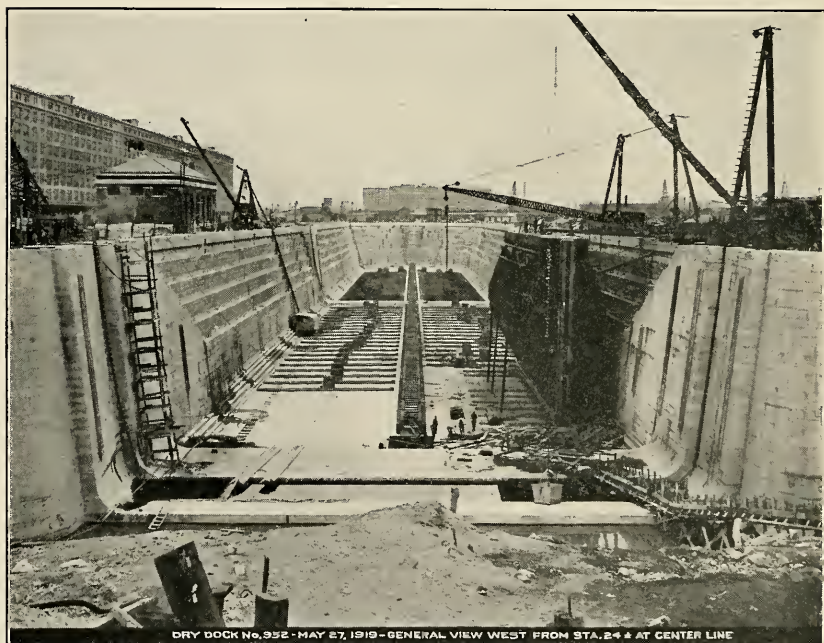








DRY DOCK NO 398 DECEMBER 22, 1919 U.S.S. VIRGINIA IN DOCK INNER SECTION VIEW FROM  $\oplus$  OF CAISSON



DRY DOCK NO. 392 - MAY 27, 1919 - GENERAL VIEW WEST FROM STA. 24 + AT CENTER LINE

Commonwealth Dry Dock, Boston.

with a dry dock known as "Commonwealth Dry Dock, Boston," with the buildings and appurtenances in connection therewith, in the city of Boston. For this property, containing 4,396,480 square feet, the United States has paid to the Commonwealth the sum of \$4,158,385.58. Illustrations of this dock are shown herein, and details of its construction and cost are printed in the annual report of the Commission on Waterways and Public Lands for 1919.

*Dry Dock Avenue.*

At the date of the report of the Commission on Waterways and Public Lands for 1919, the paving of Dry Dock Avenue, under an agreement with the Navy Department, was completed, with the exception of a small area where a building obstructed the completion of the sidewalk. During the year the paving has been finished by employees of the Division with material left by the contractor for the purpose.

*Development of Land South of Summer Street.*

During the year sales have been made of land south of Summer Street bordering on C and D streets and on Bullock Street, a new street laid out between C and D streets.

Buildings have been constructed during the year on two of the lots previously sold, one bordering on Bullock Street, the other on D Street.

In making these sales the Commonwealth has undertaken to lay out and construct railroad tracks so that cars can be delivered alongside each of the lots sold. The New York, New Haven & Hartford Railroad Company has agreed to place the cars on these tracks in the required positions without charge other than the freight rate for transporting goods from the point of origin to Boston.

In order to connect a portion of the lots sold during the year with these tracks, about 80 tons of steel rails were purchased, together with the necessary ties, switches and incidental equipment. A contract was made with the J. F. Kennedy Company to lay about 3,310 feet of track and connect the same with the existing tracks.

Under this contract 3,507 feet of track have been laid and eight switches placed. Rails and switches sufficient to build



about 3,000 feet of track remain unused, but for such tracks extra ties would be needed.

During the year an agreement has been made with the city of Boston by which the city agrees to lay out and build D Street from Fargo Street south, and Claflin Street between C and D streets; also lay out and repair the section of Fargo Street between B and C streets. The Commonwealth agreed to lay out and construct Bullock Street from Fargo Street to Claflin Street. Carrying out this agreement the city has already laid out and partially reconstructed Fargo Street between B and C streets, and is preparing the plans for laying out D and Claflin streets. It will not be ready to do any construction work there before next year. In carrying out its part of the agreement, the Division has built a sewer in Bullock Street, from Fargo Street to Claflin Street, and is now engaged in paving the street under contract with the B. E. Grant Company, dated July 19, 1920. It is expected that the work of paving will be completed early in December.

#### *Reserved Channel Bulkhead.*

On July 13, 1921, while filling was being placed back of the bulkhead on the southerly side of the Reserved Channel, a section about 60 feet long broke and a small amount of filling washed out upon the flats between the bulkhead and the Reserved Channel. The William L. Miller Company was employed to repair this break at a price of \$6,974. This work, involving the building of about 100 feet of new bulkhead to close the gap, was completed on Sept. 1, 1920.

Amount expended during the year, \$45,561.30.

Total expenditure to Dec. 1, 1920, \$347,975.15.

#### *Trolley Freight Shed.*

The freight shed built on the South Boston Flats to accommodate the trolley freight business during the war, and used later to load freight into railroad cars, caught fire on Aug. 13, 1920, and was totally consumed except for the floor which was protected by the large quantity of freight in the building. The fire began during the noon hour at the end farthest from

the office, and the building was in flames before the fire department could be of service. The wreckage has been cleared away, but it has not seemed advisable to rebuild the structure.

#### THE COMMONWEALTH FLATS AT EAST BOSTON.

The work of building an extension to the bulkhead, under contract of Sept. 3, 1919, with W. S. Rendle, was completed Dec. 20, 1919, at a cost of \$73,283.24. On Feb. 13, 1920, a contract was made with John R. Burke to place earth filling back of this bulkhead. The contract price for this work was \$22.90 for each and every hour of actual time that the dredge worked. This work was completed on May 28, 1920, at a cost of \$13,224.75.

The dredging and rehandling of material under contract dated March 14, 1916, with the Atlantic, Gulf & Pacific Company, and under various extensions of this contract, was completed Nov. 27, 1920. In all, 8,406,981 cubic yards of material were dredged or rehandled at East Boston or at City Point, South Boston. Of this amount, 4,978,673 cubic yards were used as filling at East Boston, and 3,428,308 cubic yards as filling at South Boston. The total cost of this work was \$1,368,878.72.

If advantage is to be taken of the material constantly being dredged in various portions of the harbor, and use made of such material for filling the Commonwealth flats, a contract similar to the one of March 14, 1916, should be made during the year so that this material may be rehandled and used in filling additional land at East Boston. In connection with this work the docks, slips and channel planned as a part of the improvement can be excavated when the dredge is not fully occupied with the rehandling.

During the latter part of the year the dredge was occupied in excavating what is planned to be the westerly berth of the first large pier to be built at East Boston. This will also form an approach to the wharves at Jeffries Point if the present channel is filled by the extension of the wharves of the Simpson's Patent Dry Dock Company toward the present harbor line.

Studies made during the year for the development of the flats at East Boston show that a change should be made in the harbor lines.

## ANCHORAGE BASIN.

No work has been done in this basin during the year except the repairing of dolphins injured by the striking of vessels. The most westerly dolphin has been carried away so many times that it has been decided not to rebuild it. At present the three remaining dolphins are in good condition.

## BELLE ISLE INLET.

By chapter 10 of the Resolves of 1919 the Commission on Waterways and Public Lands was directed to make a survey of Belle Isle Inlet, in the vicinity of the Boston, Revere Beach & Lynn Railroad, and the State highway at Bennington Street, and to prepare plans and make estimates of the probable cost of constructing dikes and dredging the inlet from the State highway to the bridge across the inlet at Saratoga Street, and depositing the dredged material on the borders of the inlet; also cost of constructing culverts from the embankment of the railroad at Bennington Street.

This survey was made in the spring of 1920. The estimated cost of doing the work is as follows:—

For excavating the channel and depositing the material on the adjoining marshes . . . . .	\$283,000
For building a landing . . . . .	4,000
Culverts:	
Bennington Street . . . . .	26,025
Boston, Revere Beach & Lynn Railroad . . . . .	9,612
	<hr/>
	\$322,637

The cost of doing this work is large, owing to the fact that the ends of the inlet are closed at the present time by embankments and bridges, and it will probably be necessary to build a suction dredge on the spot, as it would be practically impossible to get one in from the harbor.

## HOUGH'S NECK, QUINCY.

The work of building the sea wall under contract of Sept. 18, 1917, with Dennis F. Crowley was completed on June 19, 1920, at a cost of \$17,950.81. The city of Quincy has agreed

to do certain filling back of this sea wall for the construction of a highway.

Amount expended during the year, \$12,677.58.

Total expenditure to Dec. 1, 1920, \$19,999.85.

#### JEFFRIES YACHT CLUB.

Early in 1920 the Jeffries Yacht Club complained that the channel previously dredged to the club landing was shoaling as a result of the escape of material being rehandled at East Boston in connection with the filling there in progress. An examination of the locality showed that a portion at least of this shoaling was due to filling operations in the vicinity.

On June 8, 1920, a contract was made with the Bay State Dredging and Contracting Company to dredge to a depth of 6 feet at mean low water the channel leading to the landing of this club. The contract price for this dredging was 50 cents for each cubic yard, scow measurement. This work was completed on July 31, 1920, at a cost of \$1,728.50.

Amount expended during the year, \$1,961.90.

Total expenditure to Dec. 1, 1920, \$2,961.90.

#### MYSTIC RIVER DREDGING.

In June, 1919, a request was made by the Merrimac Chemical Company for dredging by the Commonwealth of the channel in Mystic River in the vicinity of Malden bridge. The company proposed to excavate at its own expense a berth and basin in order to operate large steamers at its wharf under construction above this bridge. On July 23, 1919, a contribution of \$15,000 was made by the company toward the cost of the work to be undertaken by the Commonwealth.

A contract was made on Dec. 8, 1919, with the Boston Dredging Company to excavate the channel to a depth of 16 feet at mean low water from the main channel below Malden bridge to a point about 1,000 feet above the bridge. The price for this dredging was 50 cents for each cubic yard, scow measurement. The work was completed July 1, 1920, except for a shoal about 30 feet wide over the pipe of the Boston Consolidated Gas Company. This shoal was left in compliance with the request of the gas company that the covering over the

pipe be undisturbed until provision was made for another pipe, so that the gas supply of the city would not be cut off during dredging. As the company could not have this new pipe ready for some time the contractor, upon the completion of the remainder of the work, was relieved of the responsibility for dredging this shoal. The channel will be completed when the new gas pipe is finished and put into operation.

The Beacon Oil Company, on Nov. 12, 1919, requested the Commonwealth to dredge in this river to enable vessels to reach the wharf of the company. The dredging desired included a berth at this wharf and a channel giving an approach to the berth. A contribution of \$50,000 was made by the company to cover cost of dredging the berth and a portion of the approach channel. On Dec. 11, 1919, a contract was made with the Bay State Dredging and Contracting Company for dredging to a depth of 30 feet at mean low water an area in Mystic River near the mouth of Island End River. The contract price for this dredging was 65 cents for each cubic yard, scow measurement. This work was completed March 30, 1920, at a cost of \$73,340.80.

Amount expended during the year, \$133,549.47.

Total expenditure to Dec. 1, 1920, \$397,838.78.

#### ORIENT HEIGHTS DREDGING.

Work under contract of Oct. 3, 1919, with the Gerrish Dredging Company for excavating a channel at Orient Heights and Harbor View was completed Aug. 28, 1920. In connection with this dredging it was found necessary to provide a wooden box culvert to conduct drainage from the area west of Saratoga Street across the flats being filled with material dredged from the channel. The William L. Miller Company was employed to build the culvert, and after the completion of the work to remove the wood work, leaving a clear outlet for the drainage. The cost of the dredging was \$27,169, and of building and removing the wooden culvert, \$6,071.

Amount expended during the year, \$19,719.53.

Total expenditure to Dec. 1, 1920, \$43,090.67.



## WEIR RIVER DREDGING.

The dredging of this river under contract of Sept. 15, 1919, with the Bay State Dredging and Contracting Company, was completed Nov. 27, 1920. The greater part of the work was finished in the spring of the year, but as some shoals were found which could not be removed before the summer excursion boats began their trips, completion was delayed until after the boats stopped running in the fall.

This channel is now not less than 275 feet wide and 12 feet deep from the main harbor channel to the wharf of the Nantasket Beach Steamboat Company at Nantasket. In all, 236,492 cubic yards of material were removed at a cost of \$125,340.76. Toward this cost a contribution of \$25,000 was made by the steamboat company.

Amount expended during the year, \$88,916.97.

Total expenditure to Dec. 1, 1920, \$124,580.10.

## WINTHROP HARBOR DREDGING.

A contract was made on Sept. 10, 1920, with the Bay State Dredging and Contracting Company to excavate a basin in Winthrop Harbor between the United States government landing and the wharf of the Winthrop Yacht Club. The contract price for this dredging was 47.9 cents for each cubic yard, scow measurement. Toward the cost of the work a contribution of \$1,000 has been made by the Winthrop Yacht Club. The work has not been commenced, but is expected to be completed early in the spring.

UNITED STATES HARBOR LINES IN CHELSEA CREEK AND  
MYSTIC RIVER.

In view of the numerous requests for extension of work beyond the established United States harbor lines, the Secretary of War deemed it best to consider a revision of these lines. On March 11, 1920, hearing was held before the Boston Harbor Line Board on the proposal to change these lines in Chelsea Creek and Mystic River. At this hearing various suggestions

were presented to make the pierhead and bulkhead lines coincident.

After hearing all parties and considering all the suggestions, the Harbor Line Board recommended the establishment of new, coincident pierhead and bulkhead lines and they were approved by the Secretary of War July 31, 1920. The changes bring the lines into conformity with proposed improvements, and will be of much assistance in the development of the harbor.

#### HAYWARDS CREEK.

In continuing development at Haywards Creek, the Division, on May 12, 1920, made an agreement with the Bethlehem Shipbuilding Corporation, Ltd., providing for definite co-operation between the Commonwealth and the corporation in making certain improvements. By the terms of this agreement the corporation agreed to build, at its own expense, a floating dry dock with the necessary appurtenances; to construct, at a cost not to exceed \$50,000, a bulkhead and culvert in and across this creek; to do certain dredging and to deposit material in the rear of the bulkhead. In consideration of the value of this work the Commonwealth, on May 12, 1920, deeded to the corporation a parcel of land containing 705,608.7 square feet, including the site for the dry dock and its appurtenances. The leases of March 28, 1917, and Oct. 25, 1917, to the Fore River Shipbuilding Corporation were terminated and a new lease was entered into under date of May 12, 1920.

To hasten this work and provide a berth at the proposed Commonwealth Pier, a contract was made on May 10, 1920, with the Bay State Dredging and Contracting Company for dredging this berth and the channel leading thereto. The material, so far as possible, was to be excavated by a hydraulic dredge and deposited on the flats at the upper end of Haywards Creek near Quincy Adams.

The Massachusetts Oil Refining Company, expecting to use this berth, made a contribution of \$10,000 toward the cost of the work. As the approach channel was to cross certain flats which the Bethlehem Shipbuilding Corporation, Ltd., planned to excavate, that corporation agreed to pay for the portion of

the work within the area which it proposed to dredge. The work was completed on Aug. 13, 1920, when 200,232 cubic yards of material had been dredged at a cost of \$98,773.56. Of this cost the Commonwealth paid \$61,291.36.

Plans for the construction of a State pier in this locality are being prepared, and it is expected that building will be commenced during the coming year. This pier will have track connections with the Fore River Railroad, as well as highway connection. The berth alongside the site of this pier has already been dredged to the depth of 30 feet at mean low water.

RIVERS, HARBORS, TIDEWATERS AND FORESHORES,  
EXCLUSIVE OF BOSTON HARBOR.

By chapter 481 of the Acts of the year 1909 the Board of Harbor and Land Commissioners was authorized and directed to undertake such work for the improvement, development, maintenance and protection of rivers, harbors, tidewaters and foreshores within the Commonwealth as it may deem to be reasonable and proper, and to expend during the years 1910, 1911 and 1912 a sum not exceeding \$300,000, not more than \$100,000 to be expended in any one year, provided, however, that an unexpended balance in any year may be used in the succeeding year. This act provided that the Board shall consider the general public advantage of the proposed work, the local interest therein as manifested by municipal or other contributions therefor, the importance of the industrial or commercial and other interests to be especially served thereby, and any other material considerations affecting the feasibility, necessity or advantage of the proposed work or the expenditure therefor; that no work shall be begun until after a public hearing has been held and a survey and estimate of cost made; that a city or town may appropriate money for the improvement of rivers, harbors, tidewaters and foreshores within its jurisdiction, the money so appropriated to be paid into the State treasury, to be expended by the Board for said purposes; and that the city or town may assume liability for all damages to property suffered by any person by any taking of land, or of any right, interest or easement in land within the city or town made by the Board for the purposes authorized by the act.

The general policy inaugurated by this act has been continued by subsequent legislation in 1912, 1916 and 1919. Chapter 231 of the General Acts of 1919 authorized the expenditure of \$750,000 during the years 1919, 1920 and 1921, not more than \$250,000 to be expended in any one year; provided, however, that an unexpended balance in any one year may be used in the succeeding year.

Petitions under the act of 1909 aforesaid have been filed during the year with the Division for surveys and improvements in the following localities: Acushnet River, New Bedford; Bass River, Yarmouth; Brant Rock, Marshfield; East Bay, Barnstable; Falmouth Inner Harbor, Falmouth; Herring River, Harwich; Katama Bay, Edgartown; Little Good Harbor River, Gloucester; Menamsha Inlet; Pines River, Revere; Point Shirley sea wall, Winthrop; Plymouth Harbor; Scituate Harbor; Stage Cove, Gloucester; Witchmere Harbor, Harwich.

Except for the holding of public hearings, and the making of surveys and estimates of cost in some instances, no conclusive action as to allotments has been taken during the year for carrying into effect improvements under petitions relating to Little Good Harbor River, Gloucester; Menamsha Inlet; Pines River, Revere; Point Shirley sea wall, Winthrop; Plymouth Harbor; and Stage Cove, Gloucester.

For information relating to work accomplished in various harbors and rivers in the Commonwealth not specifically described in this report, attention is called to the annual reports of the Board of Harbor and Land Commissioners and to the annual reports of the Commission on Waterways and Public Lands for the years 1916 to 1919, inclusive, and to the tables in the Appendix which show localities, character of work, appropriations, contributions and expenditures by the Commonwealth and certain appropriations and expenditures by the Federal government.

#### ACUSHNET RIVER.

On April 23, 1920, hearing was held on a petition of the mayor of the city of New Bedford and others for dredging a channel in Acushnet River to a depth of 25 feet at mean low water from the turning basin above Fish Island to a point below Coggeshall Street bridge. A contract was made on Aug. 2, 1920, with the Bay State Dredging and Contracting Company to dredge a channel from the turning basin above Fish Island to a point about 750 feet south of Coggeshall Street bridge in Acushnet River in the city of New Bedford and town of Fairhaven, at the following prices: dredging channel and disposing of the dredged material, including boulders 1 cubic



yard or less in volume, 52 cents per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$16 per cubic yard.

The contract provides that the channel shall be 25 feet deep at mean low water and shall be not over 350 feet wide at the connection with the turning basin, narrowing to a width of 90 feet at a point about 500 feet north of the basin and continuing at this width about 4,200 feet to the northerly limit; provided, however, that the width of the entrance at the turning basin may be reduced at the option of the Division if it is found that the total quantity of material to be removed will exceed 216,000 cubic yards.

Work under this contract is now in progress.

Amount expended during the year, \$75,960.27.

Total expenditure to Dec. 1, 1920, \$75,962.42.

#### BASS RIVER, YARMOUTH.

On April 23, 1920, hearing was held on a petition of the selectmen and others, under chapter 481 of the Acts of 1909, for additional dredging in Bass River in Dennis and Yarmouth. A contract with the Bay State Dredging and Contracting Company was made on June 3, 1920, to do certain dredging at Herring River and Witchmere Harbor, and to redredge the channel at the entrance to Bass River, at the following prices: redredging the channels and disposing of the dredged material, including boulders 1 cubic yard or less in volume, \$1.20 per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$20 per cubic yard.

This work, completed Aug. 3, 1920, comprised the redredging of the channel to a depth of 6 feet at mean low water and a width of 60 feet for a distance of about 1,500 feet inshore from the 6-foot contour at a cost of \$14,404.80.

Amount expended during the year, \$15,086.99.

Total expenditure to Dec. 1, 1920, \$89,104.74.

## BRANT ROCK, MARSHFIELD.

On April 2, 1920, hearing was held on a petition of the selectmen of the town of Marshfield, under chapter 481 of the Acts of 1909, for the protection of the sea wall built by the town south of Brant Rock. A contract was made on Sept. 10, 1920, with William H. Connor to build spur jetties in front of an existing masonry sea wall immediately south of Brant Rock, at the following price: for furnishing materials and building concrete spur jetties including excavation, backfilling trenches, disposal of surplus material, furnishing, erecting and removing forms, and all incidental work, \$21.50 for each cubic yard of concrete measured in place in the completed work.

This work, completed Oct. 25, 1920, comprised the building of seven concrete spur jetties, 50 feet long and 100 feet apart on centers, with a concrete buttress extending to the wall at six of the jetties. The seventh or northerly jetty was built out from a timber bulkhead. The purpose of the jetties is to collect and hold sand in front of the wall to prevent undermining by the sea. The buttresses are intended to help support the wall which showed some evidence of weakness. The total cost of the work under this contract was \$3,332.50.

Amount expended during the year, \$3,138.74.

Total expenditure to Dec. 1, 1920, \$4,104.58.

## COHASSET HARBOR.

In the early summer the attention of the Division was called to certain shoaling which had narrowed the harbor width from 90 feet to a minimum of 30 feet. Under an arrangement with the Bay State Dredging and Contracting Company, the shoals in the outer portion of the channel were removed and a depth of 6 feet at mean low water secured. The work was done at a cost of \$2,210.

## EAST BAY, OSTERVILLE.

On April 2, 1920, hearing was held on the petitions of the selectmen of Barnstable and others, under chapter 481 of the Acts of 1909, for further dredging in East Bay. A contract was made on June 28, 1920, with the Bay State Dredging and Contracting Company for dredging a channel and a basin in

East Bay at the following prices: dredging channel and basin and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 78 cents per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume and disposing of the same, \$20 per cubic yard.

This work, completed Oct. 22, 1920, comprised the dredging of a channel about 2,700 feet long, 75 feet wide and 6 feet deep at mean low water from the 6-foot contour in Nantucket Sound to a basin of the same depth and about 6.5 acres in area in this bay.

Toward the cost of this work a contribution of \$10,000 has been received from individuals interested in the improvement.

Amount expended during the year, \$44,097.21.

Total expenditure to Dec. 1, 1920, \$67,627.

#### ELLISVILLE HARBOR, PLYMOUTH.

The heavy storm of Nov. 6 and 7, 1919, closed the outer end of the channel dredged by the Commonwealth in 1918, and reopened the old channel around the inshore end of the dike built to close it. To repair this damage a contract was made on May 10, 1920, with George A. Finney and P. H. Marsh to redredge the channel through the beach and to build a dike across the outlet on the southeasterly side of the inshore end of the new channel, for the lump sum of \$1,000. This work, completed July 31, 1920, resulted in the restoration of the channel to the dimensions originally dredged, closed the old entrance and made the harbor accessible to small fishing craft at about half tide. The cost of work under this contract was \$1,000.

Amount expended during the year, \$3,888.

Total expenditure to Dec. 1, 1920, \$15,144.82.

#### FALL RIVER HARBOR.

##### *State Pier.*

Reference is made to the report of the Commission on Waterways and Public Lands for the year ending Nov. 30, 1916, setting forth the provisions of chapter 279 of the General Acts of 1915 authorizing the construction of a public pier and other necessary structures and connections on the water front of

Fall River; the various sketch plans, studies and estimates of cost; the votes passed by the former Board of Harbor and Land Commissioners; the license granted to the Old Colony Railroad Company to do certain filling in Fall River Harbor adjoining its Globe freight yard, enabling it to make the necessary railway connections with the proposed pier; and conferences held with the mayor and other officials of Fall River. The city has not as yet purchased the necessary site for the pier.

#### FALMOUTH INNER HARBOR.

On April 2, 1920, hearing was held on the petition of John J. Veeder and others, under chapter 481 of the Acts of 1909, for increasing the anchorage area in this harbor. A contract was made on June 3, 1920, with the Bay State Dredging and Contracting Company for dredging this harbor, at the following prices: dredging and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 58 cents per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$12 per cubic yard.

The work under this contract, completed July 9, 1920, comprised the widening of the upper part of the harbor and its extension northerly about 300 feet to a depth of 6 feet at mean low water, adding about 78,000 square feet to its anchorage area. The cost of this work was \$9,368.74.

Amount expended during the year, \$10,058.

Total expenditure to Dec. 1, 1920, \$81,538.57.

#### GLOUCESTER HARBOR.

Work in progress at the date of the report of the Commission on Waterways and Public Lands for 1919 under contract of July 28, 1919, with the Boston Dredging Company to dredge a channel westerly, northerly and northeasterly from Five Pound Island to a depth of 16 feet at mean low water and to build a pile dolphin opposite a turn in the channel is not yet completed. A portion of the ledge remains to be removed and the pile dolphin is yet to be built.

Amount expended during the year, \$19,010.88.

Total expenditure to Dec. 1, 1920, \$89,767.21.

## HERRING RIVER, HARWICH.

On April 2, 1920, hearing was held on a petition of the selectmen of Harwich, under chapter 481 of the Acts of 1909, for dredging in Herring River. It seemed best to combine the work at this river with that asked for at Bass River and Witchmere Harbor, and a contract was made on June 3, 1920, with the Bay State Dredging and Contracting Company to include the redredging of the channel to this river to a depth of 6 feet at mean low water and to a width not to exceed 50 feet, at the following prices: redredging the channels and disposing of the dredged material, including boulders 1 cubic yard or less in volume, \$1.20 per cubic yard of material, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$20 per cubic yard.

In late October no work at this river had been commenced. It was therefore concluded, in view of the high unit prices under the contract, to relieve the contractor from the necessity for carrying out the work, in the hope that the Division may be able to secure in the coming season a more favorable price for this dredging.

## KATAMA BAY, EDGARTOWN.

On April 21, 1920, hearing was held on a petition of Antone K. Silva and others, under chapter 481 of the Acts of 1909, for a harbor of refuge at Katama Bay by dredging through South Beach. After this hearing an investigation was made by the engineer and an inspection by the Division. It became clear that while the improvement is undoubtedly of value there is considerable uncertainty as to whether the opening will maintain itself after it has been dredged. Under these circumstances arrangements have been made for the dredging to be done by local parties interested in the improvement, at a cost to the Commonwealth of not more than \$2,500.

## LOBSTER COVE, GLOUCESTER.

In June, 1920, the attention of the Division was called to the necessity for dredging in Lobster Cove. It was concluded to combine this work with certain dredging in Newbury-



port Harbor, and on Sept. 1, 1920, a contract was made with the Bay State Dredging and Contracting Company to include the dredging of a basin at the entrance to Lobster Cove, Gloucester, to a depth of 6 feet at mean low water, at the following prices: dredging basin and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 65 cents per cubic yard of excavated material, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$18 per cubic yard.

This work, completed Oct. 2, 1920, comprised the dredging of a portion of a shoal on the easterly side of the entrance to this cove to make a basin about 2 acres in area and 6 feet deep at mean low water.

Amount expended during the year, \$15,443.28.

Total expenditure to Dec. 1, 1920, \$34,547.26.

#### LYNN HARBOR AND SAUGUS RIVER.

The work of dredging basins in Lynn Harbor and Saugus River, in progress at the date of the report of the Commission on Waterways and Public Lands for 1919, under contract with the Bay State Dredging and Contracting Company, was completed Dec. 4, 1919. This work consisted of deepening the basin previously dredged by the Commonwealth at the upper end of the harbor near the Nahant shore to a depth of 8 feet at mean low water, extending this basin to the yacht club floats at the head of the harbor, and dredging a basin in Saugus River in front of the premises of the Point of Pines Yacht Club to a depth of 7 feet at mean low water.

Amount expended during the year, \$1,670.04.

Total expenditure to Dec. 1, 1920, \$128,442.35.

#### NEW BEDFORD STATE PIER.

By chapter 693 of the Acts of 1914 the Board of Harbor and Land Commissioners was authorized to reconstruct and extend the present southerly pier owned by the city of New Bedford, and to reconstruct the pier adjoining the same on the north; to build sheds or other buildings on said piers, and to provide the necessary equipment and appliances for handling freight

and receiving passengers; to fill solid and dredge, and to do such other work as might be necessary to carry out the purposes of the act for the improvement of the harbor and terminal facilities of the city of New Bedford. The appropriation was \$350,000.

The original contract for this pier was made with W. H. Ellis & Son Company Jan. 5, 1915. Attention is called to the annual reports of the Commission on Waterways and Public Lands for 1916, 1917, 1918 and 1919.

The new one-story wooden freight shed and the two-story wooden immigration shed were equipped by the General Fire Extinguisher Company of Providence, R. I., with a dry-pipe system of automatic fire sprinklers at a total cost of \$7,523.51. Additional fire apparatus was also installed consisting of eight sets, 50-foot lengths  $1\frac{1}{2}$ -inch linen hose and hose racks, and twelve  $2\frac{1}{2}$ -gallon fire extinguishers.

An office was built in the second story of the immigration shed, plumbing repaired and the heating apparatus rearranged.

One 9,000-pound electrically operated freight elevator was installed, together with steel tower for the same.

On Dec. 5, 1919, the use and occupancy by the New Bedford Storage Warehouse Company for a period of three months of the New Bedford State Pier property was authorized. The results of this arrangement were so satisfactory that this permit has been renewed and is now operative.

The question of leasing the State pier for a term of years has been under consideration by the Division during the year. In accordance with the provisions of chapter 375 of the Acts of 1920 the mayor and aldermen of New Bedford were notified on Oct. 22, 1920, of the decision of the Division to lease this pier. At the request of the city a public hearing was held on this matter in New Bedford on Nov. 10, 1920. No further action has been taken by the Division.

#### NEWBURYPORT HARBOR.

On April 23, 1920, hearing was held with reference to certain dredging in Newburyport Harbor, under chapter 481 of the Acts of 1909, for the purpose of forming a harbor of refuge. The Division was later informed of the purchase by the city

of the dock between Central Wharf and the wharf of the Philadelphia & Reading Coal and Iron Company. It was decided to combine the work requested at Newburyport with that at Lobster Cove, Gloucester, and on Sept. 1, 1920, a contract was made with the Bay State Dredging and Contracting Company to include the dredging of a basin between the Philadelphia & Reading Wharf and Central Wharf in Newburyport to a depth of 6 feet at mean low water, at the following prices: dredging basin and disposing of the dredged material, including boulders one cubic yard or less in volume, \$1.65 per cubic yard of excavated material, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$18 per cubic yard.

After the making of this contract some difficulty was found in securing the necessary releases from the owners of adjacent wharf property in Newburyport and no work has therefore been commenced.

Amount expended during the year, \$9.02.

Total expenditure to Dec. 1, 1920, \$115.97.

#### POPPONESSET BAY AND WEST BAY.

The work of dredging channels in Popponesset Bay and West Bay, in progress at the date of the report of the commission on Waterways and Public Lands for 1919, under contract with John R. Burke, was completed Aug. 3, 1920. This work comprised the dredging of the channel at the entrance to Popponesset Bay and West Bay 100 feet wide and 6 feet deep at mean low water, and the dredging of the natural channel in Popponesset Bay 60 feet wide and 6 feet deep at mean low water to a point on the westerly shore of the upper part of the bay about 800 feet beyond where the channel formerly ended.

Amount expended during the year, \$16,610.78.

Total expenditure to Dec. 1, 1920, \$35,812.19.

#### SCITUATE HARBOR.

On April 2, 1920, hearing was held on a petition of Walter Haynes and others, under chapter 481 of the Acts of 1909, for dredging in Scituate Harbor near the town wharf and anchorage basin. A contract was made on May 24, 1920, with the Bay

State Dredging and Contracting Company for widening the channel opposite the town wharf and enlarging the basins to the north and south of this wharf, at the following prices: dredging channels and basins and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 59.8 cents per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards, and disposing of the same, \$20 per cubic yard.

This work was completed July 20, 1920, and resulted in the addition of about 13,000 square feet to the basin south of the town wharf; about 7,500 square feet to the basin north of the wharf; widening the channel about 30 feet on the curve opposite the south basin; and restoring the depth in the channel to 8 feet at mean low water. The basins were dredged to a depth of 6 feet at mean low water, and a small shoal in the channel to the yacht club pier removed. The cost of this work was \$30,030.95.

Amount expended during the year, \$30,920.16.

Total expenditure to Dec. 1, 1920, \$104,963.92.

#### SCITUATE SEA WALLS, NORTH SCITUATE.

The storm of Nov. 6 and 7, 1919, overturned about 400 feet of masonry wall built by the Commonwealth in 1906 and 1907 at North Scituate. On Feb. 24, 1920, a contract was made with William H. Connor to remove an old masonry wall overturned by the sea; to build in its place a concrete sea wall with spur jetties and filling; and to build spur jetties with a concrete footing course in front of an existing masonry wall, near Beach Street in North Scituate, at the following prices: furnishing materials and building concrete sea wall, spur jetties and footing course, including removal of old masonry wall, excavation, backfilling trenches, disposal of surplus material, furnishing, erecting and removing forms, and all incidental work, \$14 per cubic yard of concrete, measured in place in the completed work; additional material for filling back of wall to required slope between wall and highway, \$2 per cubic yard of additional material furnished in place.

This work was completed Aug. 12, 1920, and resulted in the removal of the masonry wall overturned by the November

storm, the building of 343 linear feet of concrete sea wall, the building of 21 concrete spur jetties, each 15 feet long, and the placing of 936 cubic yards of filling back of the wall. In addition, repairs were made to 185 linear feet of masonry wall immediately north of the new wall. This work comprised a footing course of concrete under the face of the wall to prevent it from being undermined by the action of the sea, the building of 7 concrete spur jetties, each 15 feet long, and the placing of a coping course of concrete to raise the height to that of the adjoining walls. Backfilling was placed to the new top. The total cost of the work was \$14,730.33. A contribution of \$3,500 was made by the county of Plymouth, and an equal amount contributed by the town of Scituate, toward this cost.

Amount expended during the year, \$17,060.75.

Total expenditure to Dec. 1, 1920, \$69,652.61.

#### WAQUOIT BAY, FALMOUTH AND MASHPEE.

The work of repairing the stone breakwater on the easterly side of the entrance to this bay, in progress at the date of the report of the Commission on Waterways and Public Lands for 1919, under contract with E. S. Belden & Sons, Incorporated, was completed June 7, 1920. About 1,386.03 tons of stone were placed, at a total cost of \$6,108.23.

Amount expended during the year, \$9,094.81.

Total expenditure to Dec. 1, 1920, \$31,285.40.

#### WEST BAY, BARNSTABLE.

On April 23, 1920, hearing was held on a petition of Nathan D. Bill and others, under chapter 481 of the Acts of 1909, for dredging in West Bay. A contract was made on July 1, 1920, with the Bay State Dredging and Contracting Company to dredge a channel not more than 50 feet wide on the bottom and 6 feet deep at mean low water to follow generally the existing channel from the 6-foot contour above the entrance between the jetties to the 6-foot contour about 1,400 feet below the drawbridge to Little Island, at the following prices: dredging channel and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 78 cents per cubic yard of material, scow measurement; excavating boulders in excess of 1



cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$20 per cubic yard.

Toward the cost of this work a contribution of \$10,000 has been made by individuals interested in the improvement.

Work under this contract is now in progress.

Amount expended during the year, \$8,798.13.

Total expenditure to Dec. 1, 1920, \$59,244.47.

#### WESTFIELD RIVER.

The work of extending two of the stone jetties built by the Commonwealth in this river, near the old county bridge, was completed during the year. The second jetty upstream from the bridge was lengthened about 25 feet, and the fourth jetty, 15 feet. The object of this work is to deflect the current to prevent further erosion of the westerly bank of the river below the bridge.

Amount expended during the year \$1,296.90.

Total expenditure to Dec. 1, 1920, \$6,037.29.

#### WITCHMERE HARBOR.

On April 2, 1920, hearing was held on a petition of the selectmen of Harwich, under chapter 481 of the Acts of 1909, for dredging an entrance to Witchmere Harbor. It was decided to combine this work with that asked for at Bass River and Herring River, and a contract was made on June 3, 1920, with the Bay State Dredging and Contracting Company to include the redredging of the channel to this harbor to a depth of 6 feet at mean low water and a width not to exceed 50 feet, at the following prices: redredging channel and disposing of the dredged material, including boulders 1 cubic yard or less in volume, \$1.20 per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$20 per cubic yard.

In late October no work at this harbor had been commenced. It was therefore concluded, in view of the high unit prices under the contract, to relieve the contractor from the necessity of carrying out the work in the hope that the Division may be able to secure in the coming season a more favorable price for this dredging.

## MISCELLANEOUS MATTERS.

## GREAT PONDS.

Jurisdiction over great ponds belonging to the Commonwealth, these ponds containing in their natural state 10 or more acres of land, was conferred upon the former Board of Harbor and Land Commissioners by chapter 318 of the Acts of 1888, and further authority given that Board by chapter 379 of the Acts of 1904, to sell and convey or lease any of the islands owned by the State in the great ponds, subject to the approval of the Governor and Council.

During the year the Division has made examinations, held conferences or taken other proceedings relative to Asnaconcomet Pond, Hubbardston; Lake Winthrop, Holliston; Lake Whalom, Lunenburg; Long Pond, Brewster and Harwich; Morey's Hole Pond, Plymouth; Morse Pond, Wellesley; Tisbury Great Pond, Tisbury; White Island Pond, Plymouth.

A list of the lakes and ponds of the State with areas of 10 or more acres, given by counties, is printed in the report of the Commission on Waterways and Public Lands on "Water Resources of Massachusetts, 1918."

CONSERVING AND EQUALIZING THE FLOW OF WATER IN RIVERS  
AND STREAMS.

By chapter 87 of the Resolves of 1918 a special commission on the water resources of the Commonwealth of Massachusetts was created, including in its membership the chairman of the Commission on Waterways and Public Lands, to investigate the water resources of the Commonwealth, and their report was printed as Senate Document No. 298 of 1919.

By chapter 359, Acts of 1909, chapter 564, Acts of 1912, and chapter 84, Resolves of 1917, co-operation was established between the Commonwealth and the Water Resources Branch of the United States Geological Survey, whereby data relating to the gauging of streams within the Commonwealth and other work of a similar character carried on by the said survey have

been obtained for use by the Division, said data being available for other departments of the Commonwealth.

The latest data, being a summary of Stream Flow Records for various periods ending Sept. 30, 1920, are printed on pages 214-231 of this report.

#### STATE BOUNDARIES.

Chapter 1 of the Revised Laws, section 4, requires that the Board of Harbor and Land Commissioners shall in the year 1905, and every fifth year thereafter, examine and inspect all the monuments or other marks defining the location of the boundary lines of the Commonwealth, and if any of them have been injured, displaced, removed or lost said Commissioners shall, in co-operation with persons duly authorized by the adjoining State, restore them or replace them with suitable stone monuments, and in the same manner set suitable stone monuments at points not properly marked where the State boundary is intersected by the boundary of any counties, cities or towns in the Commonwealth or by a highway or railroad. By chapter 225, Acts of 1920, a sum not exceeding \$3,000 was made available for services and expenses in the inspection of State boundary monuments.

The perambulation of the boundary line between Massachusetts and Rhode Island was made conjointly with Everett A. Kingsley, representing Rhode Island, and was commenced Sept. 15 and finished Sept. 29, 1920. All the marks were visited on the dates given in the tables,<sup>1</sup> and found to be in good condition and properly set, with certain exceptions.<sup>1</sup>

The perambulation of the boundary line between Massachusetts and Connecticut was made conjointly with Henry R. Buck, representing Connecticut, and was commenced July 19 and finished Aug. 7, 1920. All the marks were visited on the dates given in the tables,<sup>1</sup> and found to be in good condition and properly set, with a certain exception.<sup>1</sup>

The perambulation of the boundary line between Massachusetts and New York was made conjointly with Homer C. Kline, representing New York, and was commenced Oct. 6 and finished Oct. 23, 1920. All the marks were visited on the dates given

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<sup>1</sup> Not printed. In the files of the Department.

in the tables,<sup>1</sup> and found to be in good condition and properly set, with certain exceptions.<sup>1</sup>

The perambulation of the boundary line between Massachusetts and Vermont was made conjointly with Herbert M. McIntosh, representing Vermont, and was commenced Aug. 16 and finished Aug. 21, 1920. All the marks were visited on the dates given in the tables,<sup>1</sup> and found to be in good condition and properly set, with certain exceptions.<sup>1</sup>

The perambulation of the boundary line between Massachusetts and New Hampshire was made conjointly with M. C. Knapp, representing New Hampshire, and was commenced Aug. 23 and finished Sept. 3, 1920. All the marks were visited on the dates given in the tables,<sup>1</sup> and found to be in good condition and properly set, with a certain exception.<sup>1</sup>

#### PROVINCE LANDS.

The territory known as the Province Lands in Provincetown, belonging to the Commonwealth, over which the Board of Harbor and Land Commissioners was given general care and supervision by the provisions of chapter 470 of the Acts of 1893, comprises about 3,290 acres lying northerly and westerly of the line described in that act.

Reclamation work on these lands was commenced in 1894, and under the direction of a superintendent has been carried on in each succeeding year. Two methods are used to prevent movement of the sand. The barren dunes are first covered with brush or planted with beach grass. The grass is pulled in bunches about 2 inches thick for transplanting in rows about 4 feet apart and 6 inches deep, and so transplanted lives between four and five years. This work is followed and reinforced by the transplanting of trees and shrubs.

During the year work on these lands has been continued in accordance with these methods. In the winter and fall of this year 20 acres of sand dunes were covered with brush. In the spring 5 acres of bayberry were transplanted and in the early summer 93,000 pines. The work of destroying gypsy-moth clusters was continued so vigorously that very little damage was done by the moths upon these lands this year.

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<sup>1</sup> Not printed. In the files of the Department.

The parking area of 8,000 square feet, for the use of automobiles, built in 1919 at the end of the drive, on the bluff overlooking the ocean, received a coating of gravel screenings in June and a covering of road tar in the fall. This area is now in excellent condition for use.

The sum of \$183.20 has been paid into the State treasury during the year, being the amount received from licenses issued to various parties to cultivate and pick cranberries on the bogs, and to mow meadowlands.

Amount expended during the year, \$4,238.69.

Total expenditure to Dec. 1, 1920, \$85,129.97.

#### MASSACHUSETTS ATLAS SHEETS AND TOWN BOUNDARY ATLASES.

Under authority of chapter 57, Resolves of 1890, chapter 42, Resolves of 1891, chapter 360, Acts of 1900, and chapter 69, Resolves of 1915, 3,396 atlas sheets of the map of the Commonwealth and 4 town boundary atlases have been sold during the year, for which \$498.70 was received and forwarded to the Treasurer and Receiver-General.

No atlases were delivered during the year under the authority of chapter 360, Acts of 1900, as amended by chapter 484, Acts of 1909.

#### RE-ESTABLISHMENT OF CERTAIN TRIANGULATION POINTS.

By chapter 223 of the General Acts of 1915 the Board of Harbor and Land Commissioners was authorized to make such surveys and do such other work as may be required by any order of the Land Court; to re-establish and permanently mark certain stations previously established in connection with the topographical survey of the Commonwealth and the town boundary survey, which have been lost or destroyed; and to obtain the geographical position of such new points and stations as may be required from time to time by the court. The Board was allowed to expend not exceeding \$1,000 from the sum of \$1,500 which may be annually paid out of the State treasury.



During the year the location of the following triangulation stations was determined and permanently marked on the ground, and their geographical positions furnished to the Land Court: 5 stations in Peabody and Salem; 3 stations in Wayland and Sudbury; 18 stations in Nantucket. The following triangulation stations were marked with a composition plate bolted to ledges known as: "Park Ledge" in Peabody, and "Walbach and Rice Ledge" in Sudbury.

Further details of those stations are in the files of the Division.  
Amount expended during the year, \$1,000.

Total expenditure to Dec. 1, 1920, \$5,708.19.

#### LICENSES GRANTED DURING THE YEAR.

Nos.

1. Petition of the city of Boston, by its commissioner of Public Works, for license to repair and strengthen Warren bridge on Charles River, Boston. Granted Dec. 8, 1919.
2. Petition of the Ace High Chocolate Company for license to construct foundations for a building in and over Fort Point Channel, Boston. Granted Dec. 8, 1919.
3. Petition of the Haverhill Electric Company for license to lay a submarine cable in Merrimack River, northerly of the Haverhill-Groveland bridge, in Haverhill and Groveland. Granted Dec. 8, 1919.
4. Petition of Frank P. Knight and George L. Knight for license to build a portion of a building over Manchester Harbor near Central Street, Manchester. Granted Dec. 26, 1919.
5. Petition of the Edison Electric Illuminating Company of Boston for license to lay three cables in Neponset River at the temporary Neponset bridge, so called, Boston and Quincy. Granted Dec. 29, 1919.
6. Petition of the Newburyport Gas and Electric Company for license to lay and maintain lines for the transmission of electricity over Glen Mills Creek, a tributary of Parker River, Newbury. Granted Dec. 29, 1919.
7. Petition of the P. S. Huckins Company for license to build a pile and timber structure and a marine railway in Boston Harbor at East Boston. Granted Dec. 29, 1919.
8. Petition of the Merrimac Chemical Company for license to build a pile trestle on Mystic River, Everett. Granted Jan. 9, 1920.
9. Petition of the Merrimac Chemical Company for license to build pile and timber bulkheads and sod dikes, fill solid, and maintain

Nos.

- filling already done, in Mystic River, Everett. Granted Jan. 9, 1920.
10. Petition of the Edison Electric Illuminating Company of Boston and the Weymouth Light and Power Company for license to lay cables in Weymouth Fore River at and near Weymouth Fore River bridge, Quincy and Weymouth. Granted Jan. 23, 1920.
  11. Petition of the city of Boston, by its commissioner of public works, for license to build sea walls and pile platforms, to rebuild portions of the existing wall, to drive fender piles and dredge in Roxbury Canal, Boston. Granted Jan. 26, 1920.
  12. Petition of the United States Rubber Company, American Plant, for license to drive piles in Broad Canal, Cambridge, for the foundation of a portion of a transformer and switch house. Granted Jan. 26, 1920.
  13. Petition of the county commissioners of Hampden County for approval of plans for the construction of a bridge across Connecticut River in Springfield and West Springfield, as authorized by chapter 252 of the General Acts of 1915. Granted Jan. 29, 1920.
  14. Petition of the Charles River Amusement Company for license to build and maintain temporarily, for mooring purposes, four pile dolphins in Fort Point Channel, Boston. Granted Feb. 9, 1920.
  15. Petition of the Beacon Oil Company for license to build a pile wharf and pile dolphins in Mystic River, Everett. Granted Feb. 20, 1920.
  16. Petition of the Cohasset Narrows Bridge Commission for approval of plans for the construction of a new bridge across Cohasset Narrows in Wareham and Bourne, as authorized by chapter 165 of the General Acts of 1918. Granted Feb. 20, 1920.
  17. Petition of the city of Beverly for license to fill solid and build a stone culvert at and near West Federal Street and Bass River Street in Bass River, Beverly. Granted Feb. 20, 1920.
  18. Petition of the Newburyport Gas and Electric Company for license to build a pile platform and four pile dolphins on Merrimack River, Newburyport. Granted Feb. 20, 1920.
  19. Petition of the town of Harwich, by its board of selectmen, for license to build a reinforced concrete culvert at the head of Allens Harbor, Harwich. Granted Feb. 20, 1920.
  20. Petition of the Boston Molasses Company for license to fill solid in Boston Harbor near the Reserved Channel at South Boston. Granted March 3, 1920.
  21. Petition of Thomas Taggart for license to build a pile pier and float stage in Hyannis Harbor at Hyannisport, Barnstable. Granted March 9, 1920.
  22. Petition of the Marine Biological Laboratory for license to build a pile platform and float stage in Eel Pond at Woods Hole, Falmouth. Granted March 9, 1920.
  23. Petition of the Merrimac Chemical Company for license to build a

Nos.

- bulkhead and pile trestle and fill solid on Mystic River, Everett. Granted March 9, 1920.
24. Petition of Daisy M. Headley for license to build a foot bridge, on piles, with a draw therein, across Little Bay between the mainland and Nantucket Island, Fairhaven. Granted March 22, 1920.
  25. Petition of the Simpson's Patent Dry Dock Company for license to build a pile wharf, to remove two existing piers and to dredge in Boston Harbor at East Boston. Granted March 26, 1920.
  26. Petition of the New England Oil Refining Company for license to build a pile wharf, a pile trestle and four pile dolphins in Taunton River, Fall River. Granted March 26, 1920.
  27. Petition of Elizabeth W. Baxter for license to build a wharf in Lewis Bay at Hyannis, Barnstable. Granted March 26, 1920.
  28. Petition of the Boston Molasses Company for license to fill solid in tidewater at and near the junction of Farragut Road and East First Street and near the Reserved Channel at South Boston. Granted April 2, 1920.
  29. Petition of Mary T. Shumway, Ethel N. Shumway and Harold H. Shumway, heirs of Nelson Shumway, for license to build a pile and timber bulkhead and fill solid on Fort Point Channel, Boston. Granted April 2, 1920.
  30. Petition of the county commissioners of Dukes County for approval of plans for the construction of a bridge over the outlet of Lagoon Pond in Oak Bluffs and Tisbury, as authorized by chapter 89 of the Acts of 1920. Granted April 2, 1920.
  31. Petition of the New Bedford Gas and Edison Light Company for license to extend its wharf on Acushnet River, New Bedford, by building sea walls and filling solid. Granted April 5, 1920.
  32. Petition of the Beacon Oil Company for license to build a portion of a pump house, to fill solid, lay a suction pipe and construct a wooden strainer box on Island End River, Everett. Granted April 5, 1920.
  33. Petition of the Quincy Market Cold Storage and Warehouse Company for license to build and maintain a pile structure in Boston Harbor in and over a part of a dock at Constitution Wharf, Boston. Granted April 23, 1920.
  34. Petition of the Boston & Albany Railroad, the New York Central Railroad Company, lessee, for license to modify the location of the fender lines for the 70-foot width of channel in connection with the construction of a new bridge across Chelsea Creek, Boston and Chelsea, and to construct dolphins. Granted April 23, 1920.
  35. Petition of the Bethlehem Shipbuilding Corporation, Ltd., for license to fill solid in Bents Creek at its Fore River Plant, Quincy. Granted April 23, 1920.
  36. Petition of Thomas E. Reed for license to build a pile structure in Gloucester Harbor, Gloucester. Granted May 10, 1920.

Nos.

37. Petition of the Richard T. Green Company for license to build a pile wharf and bulkhead and dredge in Chelsea Creek, Chelsea. Granted May 10, 1920.
38. Petition of the American Printing Company for license to build a sea wall, extend a sewer and fill solid in a dock in Fall River Harbor, Fall River. Granted May 10, 1920.
39. Petition of Edith M. Kingsbury for license to build a marine railway, pile wharf and dike, to construct dolphins, fill solid and dredge in Neponset River, Quincy. Granted May 11, 1920.
40. Petition of the Bethlehem Shipbuilding Corporation, Ltd., for license to build a floating dry dock, including a culvert, bulkhead, mooring pier and marginal wharf, to fill solid and dredge in Haywards Creek and Weymouth Fore River, in Quincy, Weymouth and Braintree. Granted May 12, 1920.
41. Petition of the Norton Company for license to locate two float stages in Lake Quinsigamond, Worcester. Granted May 17, 1920.
43. Petition of Henry A. Morss for license to build a wharf, locate a float stage and place riprap in Marblehead Harbor at Marblehead Neck, Marblehead. Granted May 21, 1920.
44. Petition of the Fall River Electric Light Company for license to build a pile pier and five pile dolphins in Taunton River, Fall River. Granted June 23, 1920.
45. Petition of the Western Union Telegraph Company of New York for license to lay approximately 1,000 feet of submarine cable in Mystic River near the Boston & Maine Railroad drawbridge No. 8, Somerville and Medford. Granted May 25, 1920.
46. Petition of Beryl Keith Kane for license to build a wharf, supported by stone piers, in Marion Harbor, Marion. Granted May 28, 1920.
47. Petition of James M. Codman for license to build a pile wharf and locate a float stage in Buzzards Bay, Wareham. Granted June 1, 1920.
48. Petition of George T. Rice, John K. Burgess and Philip Spalding, trustees of the Tisbury Pond Club, for license to excavate a ditch connecting Long Cove and Tisbury Great Pond, West Tisbury. Granted June 4, 1920.
49. Petition of the United Electric Light Company for license to construct a new concrete intake, to replace the present intake, beyond the river line established by chapter 301 of the Acts of 1893, on Connecticut River, Springfield. Granted June 4, 1920.
50. Petition of the Standard Oil Company of New York, New England Department, for license to remove a portion of an existing wall, to build a new wall and wooden platform, to drive fender piles, to fill solid and to dredge in Chelsea Creek, East Boston. Granted June 4, 1920.
51. Petition of the Massachusetts Oil Refining Company for license to build a temporary pile pier and dolphins in Haywards Creek, Braintree. Granted June 21, 1920.



Nos.

52. Petition of the Pocahontas Fuel Company, Incorporated, for license to drive piles within the lines of its present wharf in Acushnet River, New Bedford. Granted June 21, 1920.
53. Petition of the Beacon Oil Company for license to build an addition to its wharf, on piles, to construct a pile dolphin and drive additional piles at its present wharf on Mystic River, Everett. Granted June 21, 1920.
54. Petition of the Winthrop Highlands Association for license to build a pile pier, wooden steps and a diving platform in Broad Sound, Winthrop. Granted June 23, 1920.
55. Petition of Horace L. Norris for license to build two pile wharves and two float stages in Plymouth Harbor at Saquish Head and Saquish Beach, respectively, in Plymouth. Granted June 28, 1920.
56. Petition of the Winnisimmet Ship Yard, Incorporated, for license to build two pile wharves and to remove old structures in Chelsea Creek, Chelsea. Granted June 28, 1920.
57. Petition of the town of Marion, by its board of selectmen, for license to remove portions of existing sea walls, to build new sea walls and a bridge, and to excavate, at and near South Wharf, so called, in Marion Harbor, Marion. Granted June 28, 1920.
58. Petition of the New England Oil Refining Company for license to build a pile dolphin in Taunton River, Fall River. Granted June 28, 1920.
59. Petition of the Old Colony Railroad Company for license to widen its pier, on piles, on Acushnet River, New Bedford. Granted June 28, 1920.
60. Petition of the Fairhaven Mills for license to build a bulkhead and fill solid in Acushnet River above Coggeshall Street bridge, Fairhaven. Granted June 28, 1920.
61. Petition of the Southern Massachusetts Telephone Company for license to lay a submarine cable in Pocasset Harbor from Wings Neck to Bassetts Island, Bourne. Granted July 6, 1920.
62. Petition of the New England Oil Refining Company for license to widen its trestle and build additions to its wharf, on piles, in Taunton River, Fall River. Granted July 9, 1920.
63. Petition of the Boston & Maine Railroad for license to rebuild its railroad bridge No. 32 on Bass River, Beverly and Salem. Granted July 16, 1920.
64. Petition of the Edison Electric Illuminating Company of Boston for license to lay cables under the tidewaters of a canal flowing into Town River Bay, Quincy. Granted July 16, 1920.
65. Petition of John F. Connor for license to build a pile wharf in Manchester Harbor, Manchester. Granted July 19, 1920.
66. Petition of the Boston & Maine Railroad for license to drive additional piles at its Mystic Docks on the north channel of Mystic River, Boston. Granted July 19, 1920.
67. Petition of the Fairhaven Mills for license to build a pile and timber



Nos.

- bulkhead and fill solid on Acushnet River, adjoining Coggeshall Street bridge, New Bedford. Granted July 19, 1920.
68. Petition of Joseph P. Sousa for license to build a pile pier in Provincetown Harbor, Provincetown. Granted July 23, 1920.
69. Petition of the Metropolitan District Commission for license to build a dam and gate in Blacks Creek at Blacks Creek bridge, Quincy. Granted Aug. 2, 1920.
70. Petition of Henry B. Day for license to build a pile pier in West Bay at Wianno, Barnstable. Granted Aug. 2, 1920.
71. Petition of H. P. Converse & Co. for license to build and maintain temporarily a pile and timber railroad trestle in Connecticut River, Springfield. Granted Aug. 5, 1920.
72. Petition of the New England Oil Refining Company for license to build a bulkhead and fill solid in Taunton River, Fall River. Granted Aug. 5, 1920.
73. Petition of the Boston Ice Company for license to reconstruct its dam, and maintain the same, at the outlet of Morse's Pond, Wellesley. Granted Aug. 5, 1920.
74. Petition of the Simpson's Patent Dry Dock Company for license to extend its wharf, on piles, and to dredge in Boston Harbor at East Boston. Granted Aug. 26, 1920.
75. Petition of the Commissioners for Boston and Cambridge Bridges for license to drive piles in Charles River at Brookline Street bridge, Boston and Cambridge. Granted Sept. 20, 1920.
76. Petition of Felton Bent for license to build a sea wall and fill solid in Stage Cove, Gloucester. Granted Sept. 20, 1920.
77. Petition of the board of trustees of the Boston Elevated Railway Company for license to dump snow and ice into the tidewaters of Boston Harbor. Granted Sept. 24, 1920.
78. Petition of the Boston Consolidated Gas Company for approval of plans for laying and maintaining conduits and pipes and doing other work in Mystic River near Malden bridge, Boston, as authorized by chapter 537 of the Acts of 1896. Granted Sept. 27, 1920.
79. Petition of the Standard Oil Company for license to build a pile wharf and four pile dolphins in Mount Hope Bay, Fall River. Granted Sept. 28, 1920.
80. Petition of Reuben Bigelow for license to build a pile and timber bulkhead, a marine railway and wharf, and to fill solid in Little Bay at Monument Beach, Bourne. Granted Sept. 28, 1920.
81. Petition of George S. Baldwin, William B. H. Dowse and George N. Talbot for license to build an earth dike, and a tide gate, in tide-water at the entrance to Phinney Bay at Osterville, Barnstable. Granted Sept. 28, 1920.
82. Petition of the Marine Biological Laboratory for license to build a sea wall, to fill solid and maintain a float stage in Eel Pond at Woods Hole, Falmouth. Granted Oct. 11, 1920.

Nos.

83. Petition of the city of Boston, by its commissioner of public works, for license to dump snow and ice into the tidewaters of Boston Harbor. Granted Oct. 11, 1920.
84. Petition of Francesco Gardella for license to build a concrete river wall and fill solid in Merrimack River, Haverhill. Granted Oct. 15, 1920.
85. Petition of Antonio S. Gardella for license to build a concrete river wall and fill solid in Merrimack River, Haverhill. Granted Oct. 15, 1920.
86. Petition of the Metropolitan Coal Company for license to fill solid in Mystic River easterly of and near Chelsea bridge, Chelsea. Granted Oct. 15, 1920.
87. Petition of the Metropolitan Coal Company for license to remove material and rebuild a portion of its sea wall in a dock adjoining Mystic River, Chelsea. Granted Oct. 15, 1920.
88. Petition of the city of Boston, by its commissioner of public works, for license to lay a cast-iron pipe overflow in Old Harbor, near the southerly end of K Street, and near the southerly end of N Street, South Boston. Granted Oct. 22, 1920.
89. Petition of the New England Power Company for license to erect and maintain a steel tower and string wires in and across Crystal Lake, Gardner. Granted Oct. 22, 1920.
90. Petition of the Southeastern Massachusetts Power and Electric Company for license to stretch wires or cables for a transmission line over Agawam River, Wareham. Granted Oct. 22, 1920.
91. Petition of the city of Beverly for license to fill solid and build a riprap slope in a dock in Beverly Harbor, known as "Old Ferry Way," Beverly. Granted Oct. 22, 1920.
92. Petition of Arthur Henry Lamborn for license to build a cement concrete wharf in Vineyard Haven Harbor, Tisbury. Granted Oct. 26, 1920.
93. Petition of the Bay State Freezer, Incorporated, for license to build a pile wharf in Yarmouthport Harbor, Yarmouth. Granted Nov. 5, 1920.
94. Petition of Richard M. Winfield for license to build a pile and timber bulkhead in West Bay at Osterville, Barnstable. Granted Nov. 12, 1920.
95. Petition of Frederick E. Pierce for license to build a pile and timber launchway on Mystic River, Somerville. Granted Nov. 17, 1920.
96. Petition of Richard T. Crane, Jr., for license to build and maintain pile and timber bulkheads, a pile pier and float, and to fill solid on Castle Neck River, Ipswich. Granted Nov. 26, 1920.

## MISCELLANEOUS PERMITS GRANTED DURING THE YEAR.

BOSTON & MAINE RAILROAD, to dredge berth between Piers 42 and 43 of Hoosac Tunnel docks, Boston. Granted Dec. 5, 1919.

MERRIMAC CHEMICAL COMPANY, to dredge berth at its wharf in Everett.  
Granted Dec. 5, 1919.

BOSTON, REVERE BEACH & LYNN RAILROAD COMPANY, to publish notice that Saugus River will be closed by the Boston, Revere Beach & Lynn Railroad Company to the passage of vessels through the Saugus River drawbridge, for the purpose of making necessary repairs to said bridge.  
Granted Dec. 23, 1919.

KEARNS CONSTRUCTION COMPANY, to use for storage purposes certain land at South Boston. Granted Dec. 26, 1919.

BOSTON MERCHANT MARINE SCALING COMPANY, to dump ashes at receiving basins at East Boston and South Boston. Granted Dec. 30, 1919.

NEW ENGLAND OIL REFINING COMPANY, BY THE ABERTHAW CONSTRUCTION COMPANY, AGENTS, to dredge in front of its wharf in Taunton River, Fall River. Granted Jan. 2, 1920.

ISAAC BLAIR & Co., INCORPORATED, to dump snow into tidewater from Dover Street bridge, Boston. Granted Jan. 26, 1920.

BOSTON DREDGING COMPANY, to deposit dredged material at receiving basins at East Boston and South Boston. Granted Jan. 1, 1920.

J. S. PACKARD DREDGING COMPANY, to deposit dredged material at receiving basins at East Boston and South Boston. Granted Jan. 1, 1920.

BAY STATE DREDGING AND CONTRACTING COMPANY, to deposit dredged material at receiving basins at East Boston and South Boston. Granted Jan. 1, 1920.

THE BALDWIN SHIPPING COMPANY, INCORPORATED, to use and occupy the trolley freight station and terminal at South Boston. Granted Jan. 23, 1920.

THE WESTERN UNION TELEGRAPH COMPANY, to occupy a room at Commonwealth Pier No. 5, South Boston. Granted Feb. 9, 1920.

BETTS BROTHERS & Co., to break up a lighter and deposit material on filled land of the Commonwealth near Jeffries Point, East Boston. Granted Feb. 13, 1920.

THE IRVING USEN COMPANY, to use and occupy building known as "Bosun's Locker" on Northern Avenue, South Boston. Granted Feb. 13, 1920.

FREDERIC D. FISK, DANIEL R. SORTWELL AND THEODORE HOAGUE, TRUSTEES, to dredge material from their flats in Charles River Basin on Cambridge side of the channel and southerly of Cambridge bridge. Granted Feb. 20, 1920.

ARNOLD SCOTT, ACTING IN BEHALF OF THE SUMMER RESIDENTS OF THE TOWN OF DARTMOUTH, to dredge basin on the northerly side of the wharf at Salters Point, Dartmouth. Granted March 12, 1920.

CITY OF BOSTON, BY ITS PUBLIC WORKS DEPARTMENT, to lay water pipes in certain streets on the Commonwealth flats at South Boston. Granted March 26, 1920.

- NEW BEDFORD GAS AND EDISON LIGHT COMPANY, to dredge in Acushnet River at its wharf at the foot of Coffin Street, New Bedford. Granted April 5, 1920.
- BOSTON ELEVATED RAILWAY COMPANY, to dredge berth at outer end of wharf at its power station in South Boston. Granted April 12, 1920.
- R. C. GROVESTINE, to remove sand and gravel from Nahant Beach in front of property of estate of Francis H. Johnson. Granted April 26, 1920.
- MARINE SCALING COMPANY OF NEW ENGLAND, to deposit ashes at the receiving basins at East Boston and South Boston. Granted April 26, 1920.
- BURTON-FURBER COAL COMPANY, to dredge berth in front of its wharf at East Boston. Granted April 28, 1920.
- BOSTON WOOL AND MERCHANDISE STORES, INCORPORATED, to lay and operate railroad tracks across Fargo Street, South Boston. Granted May 3, 1920.
- BETHLEHEM SHIPBUILDING CORPORATION, LTD., to excavate earth from the Commonwealth's property at Haywards Creek. Granted May 6, 1920.
- CITY OF BOSTON, BY ITS PUBLIC WORKS DEPARTMENT, to lay a 12-inch pipe in D Street from Fargo Street, South Boston. Granted May 10, 1920.
- SELECTMEN OF TOWN OF HULL, to take gravel from beach lying between the new supply pier of the Nantasket Beach Steamboat Company and the Hull Yacht Club Pier, Hull. Granted May 12, 1920.
- WILLIAM M. BAILEY COMPANY, to occupy lot of land at South Boston. Granted May 17, 1920.
- CITY OF BOSTON, BY ITS PUBLIC WORKS DEPARTMENT, to redredge berth at its Fort Hill dumping station on Atlantic Avenue at the foot of Oliver Street, Boston. Granted May 28, 1920.
- JOHN H. DRISCOLL, JR., to use and occupy Berry Island in Lake Winthrop, Holliston. Granted June 1, 1920.
- CITY FUEL COMPANY OF BOSTON, to dredge at its wharf at East Boston. Granted June 4, 1920.
- CITY FUEL COMPANY OF BOSTON, to dredge at its wharf on Neponset River, Milton. Granted June 4, 1920.
- BOSTON & MAINE RAILROAD, to publish notice that Mystic River will be closed by the Boston & Maine Railroad to the passage of vessels through the draw in its bridge on its Western Division, for the purpose of installing steel trusses in place of the present wooden ones. Granted June 15, 1920.
- ATLANTIC WORKS, to dredge a trench alongside their railway No. 3 at East Boston. Granted June 18, 1920.
- JOSEPH BURNETT COMPANY, assenting to the construction of five projections from the front wall of the building being constructed on the easterly side of D Street, South Boston. Granted June 24, 1920.



NEW ENGLAND OIL REFINING COMPANY, to dredge near its wharf and trestle in Taunton River, Fall River. Granted July 9, 1920.

TOWN OF IPSWICH, BY ITS HEALTH DEPARTMENT, to deposit clam shells in a cove adjacent to the town wharf on Ipswich River, Ipswich. Granted July 9, 1920.

CITY OF FALL RIVER, to redredge at and near the wharf of the Bowen-ville Coal Company in Mount Hope Bay, Fall River. Granted July 23, 1920.

GEORGE T. RENDLE COMPANY, to dredge the berth on the westerly side of its wharf at East Boston. Granted July 29, 1920.

WILLIAM B. EMERY, STATE QUARTERMASTER, to deposit gravel at the foot of Depot Street in Plymouth Harbor, Plymouth. Granted Aug. 2, 1920.

CITY OF FALL RIVER, to dredge in Taunton River at Central Street Creek, Fall River. Granted Aug. 5, 1920.

CITY OF FALL RIVER, to dredge in Taunton River at and near the city wharf, Fall River. Granted Aug. 5, 1920.

BOSTON SAND AND GRAVEL COMPANY, to dredge material at the mouth of Merrimack River and Ipswich River and in Annisquam River. Granted Aug. 5, 1920.

FRANK A. ANDREWS, to remove gravel from the beach on and in front of his property on Phillips Road, Nahant. Granted Aug. 20, 1920.

JOSEPH BURNETT & Co., to lay pipes in Fargo Street, South Boston. Granted Sept. 1, 1920.

RICHARD T. GREEN COMPANY, to dredge at its marine railways, East Boston. Granted Sept. 7, 1920.

BOSTON DREDGING COMPANY, to deposit in Boston Harbor, northerly of Governor's Island, material dredged from Weymouth Fore River. Granted Sept. 16, 1920.

FRANK C. TAYLOR, to dredge material from Lagoon Pond and Vineyard Haven Harbor, Tisbury and Oak Bluffs. Granted Sept. 16, 1920.

BOARD OF TRUSTEES OF THE BOSTON ELEVATED RAILWAY, to dump snow and ice upon a portion of the Commonwealth flats at South Boston. Granted Sept. 24, 1920.

BETHLEHEM SHIPBUILDING CORPORATION, LTD., to build a temporary fence across property of the Commonwealth at Haywards Creek, Quincy and Braintree. Granted Oct. 11, 1920.

CITY OF BOSTON, to dredge in Old Harbor at the outer ends of sewers leading from Kemp, Vale, H, K and N streets, South Boston. Granted Oct. 22, 1920.

CITY OF BEVERLY, to dredge an area in Beverly Harbor. Granted Oct. 22, 1920.

BOSTON SCALING AND BILGE CLEANING COMPANY, to deposit material at the receiving basin at Jeffries Point, East Boston. Granted Oct. 22, 1920.

EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON, to dredge an area in Weymouth Fore River, Quincy. Granted Oct. 29, 1920.

SWAMPSCOTT MASONIC BUILDING ASSOCIATES, INCORPORATED, to remove



boulders from beach in front of their property at Swampscott. Granted Nov. 12, 1920.

PUBLIC WORKS DEPARTMENT, DIVISION OF HIGHWAYS, to occupy an area under the viaduct extending from Summer Street to Commonwealth Pier No. 5, South Boston. Granted Nov. 22, 1920.

#### FISH WEIR PERMITS APPROVED DURING THE YEAR.

THOMAS M. DOUTHART. Permit issued by selectmen of Falmouth Dec. 1, 1919, to maintain and operate a fish trap in Buzzards Bay, Falmouth. Approved Dec. 5, 1919.

WILLIAM E. TAYLOR. Permit issued by selectmen of Falmouth Dec. 1, 1919, to maintain and operate a fish trap in Buzzards Bay, Falmouth. Approved Dec. 5, 1919.

EDMUND G. HOWES. Permit issued by selectmen of Chatham Dec. 1, 1919, to construct, maintain and operate a fish weir in Chatham South Bay, Chatham. Approved Dec. 12, 1919.

FRANK K. FREEMAN. Permit issued by selectmen of Orleans Oct. 10, 1919, to erect and maintain an eel fyke in the creek connecting Little Cove, so called, with Mill Pond, so called, in East Orleans. Approved Dec. 12, 1919.

OBED S. DAGGET. Permit issued by selectmen of West Tisbury Dec. 10, 1919, to construct and maintain a fish weir in Vineyard Sound, West Tisbury. Approved Jan. 2, 1920.

DAVID T. BUTLER. Permit issued by selectmen of Chilmark Dec. 9, 1919, to construct and maintain a fish weir in Vineyard Sound, Chilmark. Approved Jan. 9, 1920.

ERNEST C. MAYHEW. Permit issued by selectmen of Chilmark Dec. 9, 1919, to construct and maintain a fish weir in the tidewaters of Chilmark. Approved Jan. 9, 1920.

DANIEL H. NICKERSON. Permit issued by selectmen of Dennis Jan. 30, 1920, to construct and maintain a fish weir in Nantucket Sound, Dennis. Approved Feb. 9, 1920.

GEORGE A. FINNEY. Permit issued by selectmen of Plymouth Feb. 2, 1920, to construct and maintain a fish weir in Cape Cod Bay, Plymouth. Approved Feb. 9, 1920.

FREDERICK A. PEASE. Permit issued by selectmen of Fairhaven Feb. 2, 1920, to construct and maintain a fish weir in Buzzards Bay, Fairhaven. Approved Feb. 13, 1920.

MONOMOY WEIR AND FISH COMPANY. Permit issued by selectmen of Chatham Jan. 10, 1920, to construct and maintain a fish weir in Chatham Bay, Chatham. Approved Feb. 20, 1920.

ROSCOE H. GOULD. Permit issued by selectmen of Chatham Jan. 10, 1920, to construct and maintain a fish weir in Chatham Bay, Chatham. Approved Feb. 20, 1920.

GEORGE C. PARKER. Permit issued by selectmen of Chatham Jan. 10, 1920, to construct and maintain a fish weir in the northeast part of South Bay, Chatham. Approved Feb. 20, 1920.

- BENJAMIN R. BAKER. Permit issued by selectmen of Chatham Jan. 16, 1920, to construct and maintain a fish weir in Pleasant Bay, Chatham. Approved Feb. 20, 1920.
- ELMER F. MAYO. Permit issued by selectmen of Chatham Jan. 21, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved Feb. 20, 1920.
- BENJAMIN F. RICH. Permit issued by selectmen of Chatham Jan. 21, 1920, to construct and maintain a fish weir off Kidder's Point, Chatham. Approved Feb. 20, 1920.
- BENJAMIN L. JONES. Permit issued by selectmen of Chatham Feb. 16, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved Feb. 20, 1920.
- BENJAMIN L. JONES. Permit issued by selectmen of Chatham Feb. 16, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved Feb. 20, 1920.
- DAVID N. KELLEY. Permit issued by selectmen of Fairhaven Feb. 9, 1920, to construct and maintain a fish weir in Buzzards Bay, Fairhaven. Approved Feb. 20, 1920.
- SVEN HANSON. Permit issued by Municipal Council of Gloucester Jan. 28, 1920, to locate a fish trap in the tidewaters of Gloucester. Approved Feb. 20, 1920.
- ROBERT P. NOKEL. Permit issued by selectmen of Sandwich Feb. 21, 1920, to construct and operate a fish weir or weirs in Cape Cod Bay, Sandwich. Approved March 3, 1920.
- CLARINGTON E. ELDREDGE. Permit issued by selectmen of Chatham March 15, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved March 22, 1920.
- JAMES C. KELLEY. Permit issued by selectmen of Dennis March 15, 1920, to construct and maintain a fish weir in Nantucket Sound, Dennis. Approved March 22, 1920.
- ELDREDGE WOODBURY. Permit issued by municipal council of Gloucester, March 17, 1920, to maintain a fish trap at Plum Cove, Gloucester. Approved March 26, 1920.
- SIMON BERRIO. Permit issued by selectmen of Wellfleet March 13, 1920, to construct and maintain a fish weir in Cape Cod Bay, Wellfleet. Approved April 2, 1920.
- JOHN W. STUBBS. Permit issued by selectmen of Wellfleet March 13, 1920, to construct and maintain a fish weir in Cape Cod Bay, Wellfleet. Approved April 2, 1920.
- FRANK KEEZER. Permit issued by selectmen of Nahant March 22, 1920, to construct and maintain a fish weir off Bass Point, Nahant. Approved April 5, 1920.
- AARON KELLEY. Permit issued by selectmen of Dennis March 29, 1920, to construct and maintain a fish weir in Nantucket Sound, Dennis. Approved April 5, 1920.

- OTIS B. LUCE. Permit issued by selectmen of Gosnold March 20, 1920, to construct a fish trap in Vineyard Sound, Gosnold. Approved April 5, 1920.
- GEORGE C. PARKER. Permit issued by selectmen of Chatham April 5, 1920, to construct and maintain a fish weir on the north side of South Bay, Chatham. Approved April 9, 1920.
- BENJAMIN L. JONES. Permit issued by selectmen of Chatham March 31, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved April 9, 1920.
- L. PICKERT FISH COMPANY. Permit issued by selectmen of Plymouth March 31, 1920, for location of fish weir in Saquish Cove, Plymouth. Approved April 9, 1920.
- SAMUEL M. KEHOE. Permit issued by selectmen of Swampscott April 2, 1920, to construct and maintain a fish trap in Swampscott Bay, Swampscott. Approved April 12, 1920.
- HEATH BROTHERS. Permit issued by the selectmen of Manchester April 13, 1920, to construct and maintain a fish weir in the tidewaters of Manchester. Approved April 28, 1920.
- NORMAN BENSON. Permit issued by selectmen of West Tisbury April 17, 1920, to construct and maintain a fish weir in Vineyard Sound, West Tisbury. Approved April 28, 1920.
- EDWIN P. COOK. Permit issued by selectmen of Wellfleet April 24, 1920, to construct and maintain a fish weir in the tidewaters of Wellfleet. Approved April 28, 1920.
- JOSEPH C. FOREND. Permit issued by selectmen of Mattapoisett April 30, 1920, to construct and maintain a fish trap in Buzzards Bay, Mattapoisett. Approved May 6, 1920.
- THADDEUS F. ELLIS. Permit issued by selectmen of Orleans May 1, 1920, to construct and maintain a fish weir in Cape Cod Bay, Orleans. Approved May 6, 1920.
- JOSEPH B. GOULART. Permit issued by selectmen of Fairhaven May 3, 1920, to construct and maintain a fish weir in Little Bay, Fairhaven. Approved May 17, 1920.
- SHIRLEY E. NICKERSON. Permit issued by selectmen of Nantucket April 16, 1920, to construct and maintain a fish weir in tidewaters of Nantucket. Approved June 18, 1920.
- WILLIAM M. KENDRICK. Permit issued by selectmen of Chatham June 9, 1920, to set and maintain a fyke for eels in a creek above the dike extending from Samuel Ryder's Island, Chatham. Approved July 18, 1920.
- H. L. PEAKS. Permit issued by selectmen of Gosnold June 25, 1920, to construct and maintain a fish trap in Buzzards Bay, Gosnold. Approved July 12, 1920.
- EUGENE B. ELLIS. Permit issued by selectmen of Brewster July 3, 1920, to place two fish traps in Mill Creek, Brewster. Approved July 12, 1920.

- DAVID E. CURRAN. Permit issued by selectmen of Wellfleet July 10, 1920, to erect and maintain two eel fykes below Herring River dike, Wellfleet. Approved July 16, 1920.
- EDWIN P. COOK. Permit issued by selectmen of Wellfleet July 10, 1920, to erect and maintain two eel fykes in Duck Creek, Wellfleet. Approved July 16, 1920.
- FRANK A. WILLIAMS. Permit issued by selectmen of Wellfleet July 10, 1920, to erect and maintain two fykes below Herring River dike, Wellfleet. Approved July 16, 1920.
- F. THOMAS ELLIS. Permit issued by selectmen of Brewster Aug. 13, 1920, to place two fish traps in Mill Creek, Brewster. Approved Aug. 17, 1920.
- BAY STATE FREEZER, INCORPORATED. Permit issued by selectmen of Yarmouth June 16, 1920, to set and maintain a fish weir on the north shore of Yarmouth. Approved Sept. 10, 1920.
- BAY STATE FREEZER, INCORPORATED. Permit issued by selectmen of Yarmouth June 16, 1920, to set and maintain a fish weir on the north shore of Yarmouth. Approved Sept. 10, 1920.
- FREDERICK YOUNG. Permit issued by selectmen of Brewster Sept. 4, 1920, to place a fish trap in Quivet Creek, Brewster. Approved Sept. 10, 1920.
- FREDERICK YOUNG. Permit issued by selectmen of Brewster Sept. 4, 1920, to place a fish trap in Mill Creek, Brewster. Approved Sept. 10, 1920.
- ORICK D. YOUNG. Permit issued by selectmen of Chatham Sept. 2, 1920, to maintain and fish a fyke for eels in Henry Harding's Creek, Chatham. Approved Sept. 10, 1920.
- CHARLES W. SNOW. Permit issued by selectmen of Truro Sept. 4, 1920, to construct eel fykes in Pamet River, Truro. Approved Sept. 13, 1920.
- JAMES Y. GILL. Permit issued by selectmen of Wellfleet Sept. 11, 1920, to erect and maintain eel fykes in Silver Spring Creek, Wellfleet. Approved Sept. 24, 1920.
- MAURICE E. MAKER. Permit issued by selectmen of Wellfleet Sept. 11, 1920, to erect and maintain an eel fyke in Duck Creek, Wellfleet. Approved Sept. 24, 1920.
- BERT W. BELL. Permit issued by selectmen of Wellfleet Sept. 11, 1920, to erect and maintain an eel fyke in Blackfish Creek, Wellfleet. Approved Sept. 24, 1920.
- CLARENCE M. LOMBARD. Permit issued by selectmen of Wellfleet Sept. 20, 1920, to erect and maintain an eel fyke in Duck Creek, Wellfleet. Approved Sept. 24, 1920.
- TIMOTHY W. BLACK. Permit issued by selectmen of Brewster Sept. 13, 1920, to place a fish trap and an eel fyke near Mill Creek, Brewster. Approved Sept. 24, 1920.
- FREDERICK E. E. JOHNSON. Permit issued by selectmen of Chatham Sept. 22, 1920, to maintain an eel fyke in Smiths Dyke Creek, Chatham. Approved Sept. 27, 1920.

SHERMAN FISHER. Permit issued by selectmen of Wellfleet Sept. 25, 1920, to erect and maintain an eel fyke in Duck Creek, Wellfleet. Approved Sept. 28, 1920.

FREDERICK THACHER. Permit issued by selectmen of Yarmouth Oct. 28, 1920, to erect and maintain two fish weirs in Nantucket Sound, Yarmouth. Approved Nov. 5, 1920.

ARTHUR S. WEEKS. Permit issued by selectmen of Falmouth Nov. 1, 1920, to place a fish trap in Buzzards Bay, Falmouth. Approved Nov. 5, 1920.

FREDERICK THACHER. Permit issued by selectmen of Yarmouth Nov. 23, 1920, to erect and maintain a double fish weir in Nantucket Sound, Yarmouth. Approved Nov. 29, 1920.



## RECOMMENDATIONS FOR LEGISLATION.

## DIVISION OF WATERWAYS AND PUBLIC LANDS.

The policy of developing and improving the water front of Boston Harbor, from the viewpoint of anticipating the constantly increasing needs of facilities for commerce, manufacturing and other business, should be continued. Expenditures for most of the important projects are provided for in the recommendations for consideration in the Governor's budget. They include continued expenditures for dredging and filling in East Boston and South Boston, construction of piers, bulkheads, roadways and railroad connections upon the land already developed at these points, and also at Haywards Creek in Quincy and Braintree.

Such other demands as are made necessary by projects already established, requiring funds for maintenance and further development, are also included in recommendations that have been submitted for the Governor's budget.

*Harbor Lines in Boston Harbor.*

14. In determining the location of bulkheads, and other works in connection with the development of the property of the Commonwealth in Boston Harbor, it is necessary to change and establish certain harbor lines in East Boston and in South Bay.

15. Construction along the banks of important rivers in the Commonwealth requires the approval of the Division of Waterways and Public Lands in many cases where the river line is not already definitely fixed. In order that there may be established a line which shall result in properly protecting the flow of water, as well as preserving a uniform river front, it is important that definite lines should be fixed. The Division recommends such a line for a portion of the Merrimack River at Haverhill.

*Conservation of Water Resources.*

The Division of Waterways and Public Lands and its predecessors have in past years given considerable study and made extended investigations relative to the conservation, development and utilization of the water resources of the Commonwealth. These studies culminated in recommendations for legislation which were submitted in 1920. This bill was carefully considered, and in its amended form, as House Bill No. 1475, was referred to the General Court of 1921. It is recommended that this bill be reconsidered.



Appropriation (chapter 225, Acts of 1920), personal services	.	.	.	.	.	\$52,000 00
Expenditures	.	.	.	.	.	52,000 00
<hr/>						
Appropriation (chapter 153, Special Acts of 1919), office and incidental expenses, balance brought forward	.	.	.	.	.	\$795 25
Appropriation (chapter 225, Acts of 1920), office and incidental expenses	.	.	.	.	.	7,500 00
Appropriation (chapter 644, Acts of 1920), office and incidental expenses	.	.	.	.	.	171 21
<hr/>						
Expenditures	.	.	.	.	.	\$8,466 46
	.	.	.	.	.	8,466 46
<hr/>						
Appropriation (chapter 225, Acts of 1920), traveling expenses	.	.	.	.	.	\$1,200 00
Expenditures	.	.	.	.	.	922 02
<hr/>						
Appropriation (chapter 225, Acts of 1920), publicity	.	.	.	.	.	\$3,200 00
Expenditures	.	.	.	.	.	1,361 12
<hr/>						
Appropriation (chapter 153, Special Acts of 1919), operation and maintenance of Commonwealth Pier No. 5, balance brought forward	.	.	.	.	.	\$211 35
Appropriation (chapter 225, Acts of 1920)	.	.	.	.	.	76,000 00
Appropriation (chapter 644, Acts of 1920)	.	.	.	.	.	815 96
<hr/>						
Expenditures (1920)	.	.	.	.	.	\$77,027 31
	.	.	.	.	.	77,027 31
<hr/>						
Appropriation (chapter 225, Acts of 1920), repairing damages	.	.	.	.	.	\$25,000 00
Expenditures	.	.	.	.	.	25,000 00
<hr/>						
						\$52,000 00

PORT OF BOSTON FUND — *Continued.*

Appropriation (chapter 225, Acts of 1920), triangulation points and stations	.	.	.	.	.	\$1,000 00
Expenditures	.	.	.	.	.	1,000 00
<hr/>						
Appropriation (chapter 153, Special Acts of 1919), maintenance of Commonwealth's property balance brought forward	.	.	.	.	.	\$803 15
Appropriation (chapter 225, Acts of 1920)	.	.	.	.	.	55,000 00
Appropriation (chapter 644, Acts of 1920)	.	.	.	.	.	3,787 80
<hr/>						
Expenditures	.	.	.	.	.	\$59,590 95
						59,590 95
<hr/>						
Port development appropriations:						
Appropriation (chapter 351, Special Acts of 1917), development of Commonwealth flats	.	.	.	.	.	\$100,000 00
Expenditures	.	.	.	.	.	8,514 14
<hr/>						
Appropriation (chapter 143, General Acts of 1918), Reserved Channel bulkhead and Dry Dock Avenue	.	.	.	.	.	\$300,000 00
Appropriation (chapter 145, Special Acts of 1919), Reserved Channel bulkhead and Dry Dock Avenue	.	.	.	.	.	70,000 00
<hr/>						
Expenditures to Nov. 30, 1919	.	.	.	.	.	\$370,000 00
Expenditures (1920)	.	.	.	.	.	347,975 15
						45,561 30
<hr/>						
Appropriation (chapter 143, General Acts of 1918), completing dry dock	.	.	.	.	.	\$778,342 00
Expenditures to Nov. 30, 1919	.	.	.	.	.	778,342 00
Expenditures (1920)	.	.	.	.	.	145,258 08
<hr/>						
						145,258 08



Appropriation (chapter 143, General Acts of 1918), railroad tracks, etc.	.	.	.	\$200,000 00
Appropriation (chapter 162, General Acts of 1919), tracks, roadways, etc.	.	.	.	175,000 00
				<hr/>
				\$375,000 00
Expenditures to Nov. 30, 1919	.	.	\$35,101 13	
Expenditures (1920)	.	.	74,926 06	74,926 06
				<hr/>
Appropriation (chapter 143, General Acts of 1918), dredging and filling	.	.	.	\$500,000 00
Appropriation (chapter 162, General Acts of 1919), dredging and filling	.	.	.	500,000 00
Appropriation (chapter 225, Acts of 1920), dredging and filling	.	.	.	100,000 00
				<hr/>
	.			\$1,100,000 00
Expenditures to Nov. 30, 1919	.	.	\$446,463 29	
Expenditures (1920)	.	.	422,480 20	422,480 20
				<hr/>
Appropriation (chapter 225, Acts of 1920), street and pier development, South Boston	.	.	.	\$200,000 00
Expenditures (1920)	.	.	.	180 79
				<hr/>
Appropriation (chapter 162, General Acts of 1919), extension of Maverick Street, East Boston	.	.	.	\$65,000 00
Expenditures	.	.	.	—
				<hr/>
Appropriation (chapter 162, General Acts of 1919), extension of East Boston bulkhead	.	.	.	\$100,000 00
Appropriation (chapter 225, Acts of 1920)	.	.	.	100,000 00
				<hr/>
				\$200,000 00
Expenditures to Nov. 30, 1919	.	.	\$49,272 64	
Expenditures (1920)	.	.	38,160 28	38,160 28

PORT OF BOSTON FUND — *Concluded.*

Appropriation (chapter 162, General Acts of 1919), Haywards Creek	.	.	.	.	\$100,000 00
Appropriation (chapter 225, Acts of 1920)	.	.	.	.	100,000 00
					<hr/>
					\$200,000 00
Expenditures to Nov. 30, 1919	.	.	.	\$87,051 40	
Expenditures (1920)	.	.	.	\$115,797 63	
Contributions by Massachusetts Oil Refining Company and Bethlehem Shipbuilding Corporation	.	.	.	35,000 00	167,849 03
					<hr/>
Appropriation (chapter 162, General Acts of 1919), dredging minor channels, Boston Harbor	.	.	.	.	\$100,000 00
Appropriation (chapter 225, Acts of 1920)	.	.	.	.	100,000 00
					<hr/>
					\$200,000 00
Expenditures to Nov. 30, 1919	.	.	.	\$61,228 77	
Expenditures (1920)	.	.	.	\$279,178 93	
Contributions by Nantasket Beach Steamboat Company and others	.	.	.	90,000 00	250,407 70
					<hr/>
					189,178 93
Appropriation (chapter 162, General Acts of 1919), maintenance of Commonwealth Pier No. 1, balance brought forward	.	.	.	.	\$7 57
Appropriation (chapter 225, Acts of 1920)	.	.	.	.	15,000 00
Appropriation (chapter 644, Acts of 1920)	.	.	.	.	22 21
					<hr/>
					\$15,029 78
Expenditures (1920)	.	.	.	.	15,029 78
					<hr/>
Total expenditures	.	.	.	.	\$1,245,455 05
Payments by State Treasurer (Development of Port of Boston Loan Fund bonds)	.	.	.	.	2,328,561 59
					<hr/>
					\$3,574,016 64

Balance Nov. 30, 1920 . . . . . \$1,360,953 38

### BOSTON HARBOR DREDGING.

Appropriation (chapter 348, Special Acts of 1917) from Harbor Compensation Fund . . . \$100,000 00  
 Expenditures to Nov. 30, 1919 . . . . . 62,556 59  
 Unexpended balance Nov. 30, 1920 . . . . . \$37,433 41

### QUINCY BAY SHORE (HOUGHS NECK SEA WALL).

Appropriation (chapter 376, Special Acts of 1917) . . . . . \$15,000 00  
 Contribution, city of Quincy . . . . . 5,000 00  
 Unexpended balance Nov. 30, 1920 . . . . . \$20,000 00

### To Nov. 30 —

	1918.	1919.	1920.	Total.
Contract work . . . . .	\$5,440 00	—	\$12,510 81	\$17,950 81
Engineering . . . . .	1,397 53	\$393 55	166 77	1,957 85
Unexpended balance Nov. 30, 1920 . . . . .	\$6,837 53	\$393 55	\$12,677 58	\$19,908 66
				\$91 34

## INVESTIGATION AS TO CERTAIN RIVERS IN BOSTON HARBOR.

Appropriation from Harbor Compensation Fund (chapter 17, Resolves of 1919; chapter 211, Special Acts of 1919)	.	.	Total.	\$20,000 00
Expenditures:				
Engineering	.	.	\$1,771 66	1,771 66
Unexpended balance Nov. 30, 1920 .	.	.		\$18,228 34

## INVESTIGATION AS TO FEASIBILITY OF BRIDGE OR TUNNEL, BOSTON TO EAST BOSTON.

Appropriation from Harbor Compensation Fund (chapter 51, Resolves of 1919; item 329c, chapter 242, Special Acts of 1919)	.	.		\$10,000 00
Appropriation by city of Boston .	.	.		10,000 00
Expenditures:			Total.	\$20,000 00

Engineering	.	.	\$7,641 37	
Borings	.	.	9,208 12	
Unexpended balance Nov. 30, 1920	.	.	\$16,849 49	

## OPERATION, NEW BEDFORD PIER.

Appropriation (chapter 225, Acts of 1920), operation New Bedford Pier No. 1 .	.	.	.	\$10,000 00
Appropriation (chapter 644, Acts of 1920), operation New Bedford Pier No. 1 .	.	.	.	3,274 33
Appropriation brought forward from 1919 .	.	.	.	13,132 21
Expenditures	.	.	.	\$26,406 54

## WATERWAYS FUND.

## Chapter 21, General Acts of 1918.

Balance Nov. 30, 1919 . . . . .						\$11,345 57
Receipts Dec. 1, 1919, to Nov. 30, 1920 . . . . .						12,349 86
						<hr/> \$23,695 43
Appropriation (chapter 225, Acts of 1920), compensation of dumping inspectors . . . . .						\$2,000 00
Expenditures . . . . .						203 01
						<hr/> 203 01
Unexpended balance Nov. 30, 1920 . . . . .						<hr/> \$23,492 42

## RECEIPTS, 1920.

*Port of Boston Fund.*

Rent under leases and permits . . . . .						\$113,500 34
Use of Commonwealth Pier No. 5 . . . . .						159,413 19
Use of Commonwealth Pier No. 1 . . . . .						31,891 24
Use of Maverick Street property . . . . .						720 00
Use of Hayward Creek property . . . . .						418 00
Inspection of dumping, Boston Harbor . . . . .						3,133 20
Dumping at receiving basins . . . . .						14,832 05
Sundries . . . . .						2,133 41
Sale of land and property . . . . .						4,204,132 72
						<hr/> \$4,530,174 15

*Harbor Compensation Fund.*

Charges under licenses . . . . .						6,665 90
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*Waterways Fund.*

Inspection of dumping, outside Boston Harbor . . . . .						\$400 72
Charges under licenses . . . . .						11,949 14
						<hr/> 12,349 86





## EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1920, INCLUSIVE.

PAYMENTS.	Boston Harbor.	Commonwealth Flats at East Boston.	Commonwealth Flats at South Boston. <sup>1</sup>	Commonwealth Pier No. 5.	Dry Dock.	Haywards Creek.	Mystic River.
To Nov. 30, 1919 . . . . .	\$1,617,361 95	\$1,607,232 50	\$6,048,605 93	\$3,986,271 25	\$2,961,645 51	\$259,818 36	\$204,289 31
1920.							
East Boston Tunnel investigation (chapter 51, Resolves of 1919).	8,424 75	-	-	-	-	-	-
Investigation as to certain rivers of Boston Harbor . . .	-	-	-	-	-	-	430 31
Quincy Bay shore . . . . .	12,677 58	-	-	-	-	-	-
Port development appropriations (chapter 351, Special Acts of 1917);	-	-	-	-	-	8,514 14	-
Development of Commonwealth flats (chapter 143, General Acts of 1918).	-	-	45,561 30	-	145,258 08	-	-
Reserved Channel bulkhead . . . . .	-	-	74,926 06	-	-	-	-
Railroad tracks and roadways (chapter 143, General Acts of 1918, and chapter 162, General Acts of 1919).	-	-	223,676 35	-	10,303 05	-	-
Dredging and filling (chapter 162, General Acts of 1919) .	-	188,500 80	-	-	-	-	-
Haywards Creek development . . . . .	-	-	-	-	-	115,797 63	-
Extension, East Boston bulkhead (chapter 225, Acts of 1920).	-	38,160 28	-	-	-	-	-
Street and pier development . . . . .	-	-	180 79	-	-	-	-
Port of Boston fund (chapter 225, Acts of 1920) . . .	-	-	-	-	-	-	-
Boston Harbor, main channel . . . . .	-	-	-	-	-	-	133,119 16
Maintenance, Commonwealth property . . . . .	-	-	-	-	194 51	-	-
Maintenance, Commonwealth Pier No. 1 . . . . .	-	-	-	-	-	-	-
	\$1,638,464 28	\$1,833,893 58	\$6,392,950 43	\$3,986,271 25	\$3,117,401 15	\$384,130 13	\$397,838 78

<sup>1</sup> Includes cost of Commonwealth Pier No. 6, \$1,067,598.90.

EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1920, INCLUSIVE — *Concluded.*

PAYMENTS.	Malden River. <sup>1</sup>	Chelsea Creek.	Commercial Point, Dorchester Bay.	Commonwealth Pier No. 1, East Boston.	Commonwealth Pier No. 5, Operation and Maintenance.	Commonwealth Pier No. 1, Maintenance.	Maintenance of Other Property of Commonwealth.
To Nov. 30, 1919 . . . . .	-	\$60,171 24	\$53,213 10	\$1,113,905 89	\$249,563 71	\$5,837 28	\$137,030 98
1920.							
East Boston Tunnel investigation (chapter 51, Resolves of 1919).	-	-	-	-	-	-	-
Investigation as to certain rivers of Boston Harbor . . .	-	134 62	-	-	-	-	-
Quincy Bay shore . . . . .	-	-	-	-	-	-	-
Port development appropriations (chapter 351, Special Acts of 1917):							
Development of Commonwealth flats (chapter 143, General Acts of 1918).	-	-	-	-	-	-	-
Reserved Channel bulkhead . . . . .	-	-	-	-	-	-	-
Railroad tracks and roadways (chapter 143, General Acts of 1918, and chapter 162, General Acts of 1919).	-	-	-	-	-	-	-
Dredging and filling (chapter 162, General Acts of 1919) .	-	-	-	-	-	-	-
Haywards Creek development . . . . .	-	-	-	-	-	-	-
Extension, East Boston bulkhead (chapter 225, General Acts of 1920).	-	-	-	-	-	-	-
Street and pier development . . . . .	-	-	-	-	-	-	-
Port of Boston fund (chapter 225, Acts of 1920) . . .	-	-	-	-	77,027 31	-	-
Boston Harbor, main channel . . . . .	\$35,000 00	-	-	-	-	-	59,396 44
Maintenance, Commonwealth property . . . . .	-	-	-	752 91	-	14,276 87	-
Maintenance, Commonwealth Pier No. 1 . . . . .	-	-	-	-	-	-	-
	\$35,000 00	\$60,305 86	\$53,213 10	\$1,114,658 80	\$326,591 02	\$20,114 15	\$196,427 42

Grand total, \$19,557,259.95.

<sup>1</sup> Expended by United States government.

APPROPRIATIONS, CONTRIBUTIONS AND EXPENDITURES FOR IMPROVEMENT OF SMALL HARBORS AND CHANNELS WITHIN BOSTON HARBOR, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS, FROM 1893 TO 1920, INCLUSIVE.

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Cottage Park Channel, Winthrop.	Dredging . . .	\$9,525 92	—	\$9,504 58
Dorchester, easterly shore, Boston.	Dredging . . .	70,363 66	—	70,171 31
Harbor View, Boston . . .	Dredging . . .	10,146 00	—	146 00
Hingham Harbor . . .	Dredging . . .	13,180 69	\$3,000 00	16,180 69
Houghs Neck Channel, Quincy	Dredging . . .	26,952 54	1,500 00	28,452 54
Island End River, Everett .	Survey . . .	264 10	—	264 10
Jeffries Point Channel . .	Dredging . . .	12,961 90	—	2,961 90
Mystic River (near Lawrence and Wiggin's Wharf).	Dredging . . .	5,927 70	—	5,927 70
Neponset River . . .	Dredging . . .	44,152 59	—	44,151 85
Orient Heights Channel . .	Dredging . . .	43,446 15	—	43,090 67
Pleasant Park Yacht Club Channel.	Dredging . . .	3,154 92	—	3,154 92
Point Shirley . . .	Dredging . . .	1,986 53	—	1,986 53
Shirley Gut, Boston and Winthrop.	Dredging . . .	1,906 20	—	1,906 20
South Boston, southerly shore	Dredging . . .	126,972 48	—	126,972 44
Stony Beach, Hull . . .	Sea wall . . .	11,607 90	—	11,335 07
Weir River, Hull . . .	Dredging . . .	99,580 10	25,000 00	124,580 10
Wessagussett Channel . .	Dredging . . .	815 20	—	815 20
Weymouth Fore River . .	Dredging . . .	46,838 34	—	31,913 85
Winthrop Harbor Channels .	Dredging . . .	27,962 02	1,000 00	26,707 44
Wollaston Channel . . .	Dredging . . .	34,309 77	—	33,888 38
Totals . . .	. . .	\$592,054 71	\$30,500 00	\$584,111 47

CONTRIBUTIONS AND EXPENDITURES FOR RIVER AND HARBOR WORK FROM DEC. 1, 1919, TO NOV. 30, 1920, UNDER CHAPTER 481, ACTS OF 1909.

LOCATION.	Character of Work.	Contributions.	Expenditure.
Acushnet River . . .	Dredging . . .	—	\$75,960 27
Bass River, Yarmouth . . .	Filling basin . . .	—	2,547 35
Brant Rock, Marshfield . . .	Spur jetties . . .	—	3,138 74

CONTRIBUTIONS, ETC. — *Concluded.*

LOCATION.	Character of Work.	Contributions.	Expenditure.
Cohasset Harbor . . . . .	Survey . . . . .	—	\$298 19
Connecticut River, Holyoke . .	Marking and lighting old piers	—	181 74
Connecticut River, West Springfield	Riprapping bank . . . .	—	4,070 79
Cotuit Harbor . . . . .	Dredging . . . . .	—	500 00
East Bay, Osterville . . . . .	Dredging . . . . .	\$10,000 00	44,097 21
Ellisville Harbor . . . . .	Dredging . . . . .	—	2,857 50
Falmouth Heights . . . . .	Sea wall . . . . .	—	1,867 42
Falmouth Inner Harbor . . . .	Dredging . . . . .	—	9,912 35
Five Pound Island, Gloucester .	Dredging . . . . .	—	18,649 11
Gloucester Harbor . . . . .	Survey . . . . .	—	361 77
Herring River, Harwich . . . .	Survey . . . . .	—	362 07
Ipswich River . . . . .	Wall and bulkhead . . . .	—	441 22
Lobster Cove, Gloucester . . .	Dredging . . . . .	—	15,443 28
Lynn Harbor . . . . .	Dredging . . . . .	—	13,005 74
Lynn Harbor and Saugus River .	Dredging . . . . .	—	1,670 04
Merrimack River . . . . .	Surveys . . . . .	—	556 91
New Bedford Harbor . . . . .	Pier . . . . .	13,446 74 <sup>1</sup>	14,974 11
Newburyport Harbor . . . . .	Survey . . . . .	—	9 02
Pamet River . . . . .	Dredging . . . . .	—	19,221 69
Plymouth Harbor . . . . .	Dredging . . . . .	—	1,432 90
Popponesset Bay . . . . .	Dredging . . . . .	—	14,760 20
Point Shirley . . . . .	Shore protection . . . . .	—	130 45
Scituate . . . . .	Sea walls . . . . .	7,000 00	9,011 68
Scituate Harbor . . . . .	Dredging . . . . .	—	30,920 16
Sesuit Harbor . . . . .	Jetty . . . . .	—	513 50
Waquoit Bay . . . . .	Repairing breakwater . . .	—	9,071 81
Westfield River . . . . .	Extension of jetties . . . .	—	1,296 90
West Bay . . . . .	Dredging . . . . .	10,000 00	10,648 71
Winthrop Shore . . . . .	Sea wall . . . . .	—	18 72
Witchmere Harbor . . . . .	Dredging . . . . .	—	149 83
Yarmouthport Harbor . . . . .	Dredging . . . . .	—	5,000 00
General . . . . .	— — —	—	4,627 24
		\$40,446 74	\$317,708 62

<sup>1</sup> Paid by surety company.



APPROPRIATIONS, CONTRIBUTIONS AND EXPENDITURES FROM 1893 TO 1920, INCLUSIVE, FOR RIVER AND HARBOR WORK, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS, TO NOV. 30, 1920 (EXCEPTING BOSTON HARBOR).

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Acushnet River . . .	Inspection . . .	\$75,962 42	-	\$75,962 42
Allens Harbor, Harwich . .	Surveys . . .	302 00	-	302 00
Allens Pond, Dartmouth .	Survey . . .	195 95	-	195 95
Annisquam River, Gloucester .	Dredging, removing ledges and riprap.	107,630 63	-	107,260 75
Apponagansett Harbor and River, Dartmouth.	Survey, dredging and stone breakwater.	56,159 59	-	55,786 05
Barnstable Harbor . . .	Survey and dredging	17,392 18	\$1,500 00	18,554 64
Bass River, Beverly . . .	Dredging . . .	25,539 81	55,535 75	81,075 56
Bass River, Dennis and Yarmouth.	Jetties, dredging and survey.	88,089 74	2,500 00	89,104 74
Brant Rock, Marshfield . .	Sea wall . . .	4,104 58	-	4,104 58
Bucks Creek, Chatham . .	Jetties, survey and dredging.	29,739 06	1,500 00	31,067 74
Buzzards Bay, Falmouth .	Survey . . .	166 11	-	166 11
Cataumet Harbor and Squeetague Pond, Bourne and Falmouth.	Dredging . . .	26,520 68	7,350 00	33,726 77
Centerville River, Barnstable	Dredging . . .	6,103 22	1,500 00	7,603 22
Cohasset Harbor, Cohasset and Scituate.	Breakwater and dredging.	36,172 55	20,691 88	56,864 43
Concord River, Billerica . .	Removing boulders .	1,514 59	150 00	1,664 59
Connecticut River . . .	Investigation of navigation and surveys.	10,637 04	-	6,970 99
Connecticut River . . .	Improvement . . .	103 63	-	103 63
Connecticut River, Agawam .	Protective work .	20,396 09	-	18,814 42
Connecticut River, Chicopee .	Survey, wall and riprap.	25,149 02	640 00	25,789 02
Connecticut River, Hadley .	Protective work and diversion wall.	100,443 65	500 00	97,740 94 <sup>1</sup>
Connecticut River, Hatfield .	Dikes and riprap .	14,751 82	1,000 00	14,952 57
Connecticut River, Holyoke .	Marking and lighting old piers.	559 03	-	559 03
Connecticut River, Holyoke .	Dredging and protective work.	18,815 78	415 00	4,230 78
Connecticut River, Northampton.	Protective work .	1,525 80	-	1,524 20
Connecticut River, South Hadley.	Wall . . .	6,406 36	1,000 00	7,379 58
Connecticut River, West Springfield.	Protective work .	12,002 78	-	11,919 27 <sup>2</sup>
Conservation of waters . .	Investigation . .	38,000 00	-	35,766 26
Cotuit Harbor, Barnstable .	Dredging and survey	60,248 02	2,000 00	59,219 91
Cuttyhunk Harbor, Gosnold .	Jetties and dredging .	61,828 25	9,000 00	70,754 18
Deacons Pond Harbor, Falmouth. <sup>3</sup>	- -	-	-	-

<sup>1</sup> From 1888, inclusive.<sup>2</sup> From 1891, inclusive.<sup>3</sup> See Falmouth Inner Harbor.

APPROPRIATIONS, ETC. — *Continued.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Duxbury Bay and Harbor . . .	Dredging . . .	\$27,798 79	—	\$27,798 79
East Bay, Osterville . . .	Jetties, dredging and removing scows.	57,961 56	\$10,000 00	67,627 00
Edgartown Harbor . . .	Survey . . .	205 65	—	205 65
Ellisville Harbor . . .	Dredging . . .	15,144 82	—	15,144 82
Essex County beaches . . .	Survey . . .	1,000 00	—	1,000 00
Essex River . . .	Dredging . . .	5,000 00	—	5,000 00 <sup>1</sup>
Fall River Harbor . . .	Improvement . . .	350,290 54	—	1,130 18
Falmouth Heights, Falmouth	Sea wall . . .	37,006 94	13,000 00	50,006 94
Falmouth Inner Harbor . . .	Dredging, jetties and wall.	67,538 57	14,000 00	81,538 57
Glades, North Scituate . . .	Survey . . .	51 63	—	51 63
Gloucester Harbor, Gloucester	Dredging and removing ledges.	74,767 21	7,500 00	89,767 21
Green Harbor, Marshfield . . .	Jetties, dredging and survey.	90,804 54	—	76,466 85
Gun Rock Point, Hull . . .	Breakwater . . .	48,096 11	10,000 00	58,096 11
Harbor Cove, Gloucester . . .	Survey and dredging	18,528 73	866 00	19,394 73
Herring Creek, Scituate . . .	Survey . . .	253 76	—	253 76
Herring River, Harwich . . .	Jetties and dredging .	39,734 34	2,500 00	41,590 04
Herring River, Wellfleet . . .	Dikes and ditches .	11,832 74	10,000 00	21,800 73
Housatonic River, Sheffield . .	Survey . . .	2,011 29	—	2,011 29
Hull . . .	Sea wall and survey .	25,258 32	8,882 06	34,140 38
Humarock Beach, Scituate . . .	Survey . . .	250 00	—	236 07
Hyannisport, Barnstable . . .	Survey and break-water.	49,988 82	2,500 00	52,488 82
Improvement of rivers and harbors.	General expenses .	11,620 06	—	11,620 06
Ipswich River, Ipswich . . .	Jetty, wall, riprap and dredging.	47,325 48	1,000 00	48,318 92
Kings Beach, Swampscott . . .	Removal of obstruction.	166 41	—	166 41
Lake Anthony, Oak Bluffs . . .	Jetties and dredging .	63,354 22	2,000 00	62,145 18
Lake Quannapowitt, Wakefield	Investigation . . .	1,004 21	—	345 32
Lewis Bay, Barnstable . . .	Survey and dredging	29,211 64	—	28,963 21
Little Harbor, Marblehead . . .	Dredging . . .	8,666 16	2,500 00	11,166 16
Little River, Gloucester . . .	Survey . . .	862 03	—	862 03
Lobster Cove, Gloucester . . .	Dredging . . .	33,047 26	1,500 00	34,547 26
Lynn Harbor, anchorage basin	Survey and dredging	121,789 29	5,200 00	121,588 07
Lynn Harbor and Saugus River	Dredging and filling .	90,942 35	37,500 00	128,442 35
Manchester Harbor . . .	Survey, jetties and dredging.	68,100 67	43,500 00	109,078 51

<sup>1</sup> Expended by United States government.

APPROPRIATIONS, ETC. — *Continued.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Menamsha Inlet, Chilmark and Gay Head.	Jetties, dredging and sea wall.	\$63,423 34	\$700 00	\$64,019 69
Merrimack River . . . .	Investigation and survey.	1,308 50	—	1,208 50
Mill River, Gloucester . . .	Survey and dredging .	24,632 86	300 00	24,899 59
Mitchells River, Chatham .	Survey . . . .	322 96	—	322 96
Nantucket Harbor . . . .	Dredging . . . .	42,058 63	1,000 00	42,779 78
New Bedford Harbor . . . .	Dredging . . . .	1,409 76	—	1,409 76
New Bedford Harbor . . . .	Pier, shed and dredging.	371,899 77	13,446 74 <sup>1</sup>	385,346 51
New Bedford State pier . . .	Improvement of . . .	73,461 00	—	73,436 38
New Bedford State pier . . .	Operation and maintenance.	43,274 33	—	43,259 82
Newburyport Harbor . . . .	Survey . . . .	115 97	—	115 97
Nobscusset Harbor, Dennis .	Breakwater, dredging and riprap.	31,874 49	1,200 00	23,713 94
North River, Marshfield . . .	Surveys and removing rocks.	6,858 75	1,800 00	8,658 75
North River, Salem . . . .	Survey . . . .	704 52	—	704 52
Oak Bluffs . . . . .	Removing rocks . . .	632 45	—	594 95
Oak Bluffs . . . . .	Sea wall . . . .	19,542 11	2,500 00	22,042 11
Onset Bay, Wareham . . . .	Survey and dredging	14,295 89	1,000 00	15,295 89
Orleans . . . . .	Survey . . . .	104 18	—	104 18
Pamet River, Truro . . . .	Survey, dredging and repairing jetties.	191,096 80	1,200 00	192,296 80
Paskamansett River, Dartmouth.	Dredging and jetty . .	5,227 68	—	5,227 68
Penikese Island, Gosnold . .	Pile wharf and survey	5,300 00	—	5,192 95
Plum Island River, Newbury and Newburyport.	Survey . . . .	983 31	—	983 31
Plymouth Harbor . . . .	Dredging . . . .	176,214 99	71,794 55	221,507 27 <sup>2</sup>
Popponesset Bay . . . .	Dredging . . . .	46,252 33	—	46,252 33
Powow River . . . . .	Dredging channel and riprapping wall.	502 94	—	502 94
Province Lands, Provincetown	Reclamation . . . .	88,000 00	—	85,129 97
Provincetown Harbor . . . .	Survey . . . .	1,217 78	—	1,217 78
Quansett Harbor, Orleans . .	Survey . . . .	195 88	—	194 50
Quicks Hole, Gosnold . . . .	Survey . . . .	500 00	—	—
Red Brook Harbor, Bourne . .	Removing pier . . . .	275 00	—	275 00
Revere . . . . .	Stone breakwater . .	60,407 09	—	60,397 93
Rock Harbor, Orleans . . . .	Dredging . . . .	12,108 25	400 00	12,492 71
Rockport Harbor . . . .	Dredging and removing rocks.	14,429 32	—	13,749 02
Salem Harbor . . . . .	Survey . . . .	3,050 05	—	1,050 05

<sup>1</sup> Paid by surety company.<sup>2</sup> \$57,000 expended under direction of United States government.

APPROPRIATIONS, ETC. — *Concluded.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Salt Pond River, Eastham . . . .	Survey . . . .	\$210 11	—	\$210 11
Salters Point, Dartmouth . . . .	Breakwater . . . .	13,509 59	\$1,500 00	15,009 59
Sandwich Harbor . . . . .	Dredging channel, riprap and jetties.	80,579 84	—	80,579 84
Saugus River, Lynn and Saugus . . . .	Survey and dredging . . . .	19,206 64	2,000 00	20,845 17
Scituate . . . . .	Sea wall and riprap . . . .	63,522 48	7,235 00	69,652 61
Scituate Harbor . . . . .	Dredging . . . . .	96,663 92	8,300 00	104,963 92
Scorton Harbor, Sandwich . . . .	Jetty and dredging . . . .	19,426 39	500 00	17,774 34
Sesuit Harbor, Dennis . . . . .	Jetty . . . . .	28,067 85	1,500 00	24,555 10
Sippican Harbor, Marion . . . . .	Survey . . . . .	7 17	—	7 17
Smith's Cove, Gloucester . . . .	Survey and dredging . . . .	5,163 07	—	5,163 02
South River, Salem . . . . .	Dredging . . . . .	10,523 65	3,000 00	13,462 66
South Watuppa Pond, Fall River.	Fenders and excavation.	203 42	—	203 42
Stage Harbor, Chatham . . . . .	Dikes and survey . . . .	10,803 01	—	10,803 01
Taunton River . . . . .	Survey and investigation.	5,532 99	—	1,960 51
Taunton-Brockton waterway . . . .	Investigation . . . . .	5,388 46	—	5,278 18
Taunton River-Boston Harbor Canal.	Survey . . . . .	10,000 00	—	9,932 75
Taunton River-Massachusetts Bay Canal.	Survey . . . . .	11,786 71	—	11,786 71
Vineyard Haven Harbor . . . . .	Repairing sea wall . . . .	9,210 06	2,380 50	11,590 56
Vineyard Haven Harbor, Tisbury.	Breakwater and dredging.	45,089 48	1,000 00	45,518 25
Waquoit Bay, Falmouth . . . . .	Breakwater wall and bulkhead.	29,583 79	2,000 00	31,285 40
Wareham River . . . . .	Survey and dredging . . . .	37,349 27	5,000 00	42,349 27
Warrens Cove, Plymouth . . . . .	Sea wall . . . . .	14,468 97	9,713 98	24,481 22
Watch Hill, Chatham . . . . .	Survey and riprap . . . .	15,020 47	—	14,968 75
Wellfleet Harbor . . . . .	Survey and dredging . . . .	16,867 22	1,500 00	17,600 29
West Bay, Barnstable . . . . .	Jetties and dredging . . . .	59,281 84	10,000 00	59,244 47
West Falmouth Harbor, Falmouth.	Dredging . . . . .	25,655 31	—	24,386 18
West Harwich . . . . .	Survey . . . . .	9 00	—	9 00
Westfield River . . . . .	Survey, jetties . . . . .	6,296 90	—	6,037 29
Wild Harbor, Falmouth . . . . .	Jetty and dredging . . . .	15,671 59	5,000 00	15,614 72
Winthrop shore . . . . .	Sea walls and protective work.	17,021 51	3,000 00	20,021 51
Witchmere Harbor, Harwich . . . .	Jetties and dredging . . . .	28,912 11	1,000 00	29,769 41
Woods Hole, Great Harbor, Falmouth.	Dredging . . . . .	5,468 86	1,500 00	6,968 86
Wrecks . . . . .	Removal from tide-water.	65,816 66	—	7,005 08
Yarmouthport Harbor . . . . .	Survey . . . . .	83,977 37	7,000 00	90,977 37
		\$4,404,052 06	\$446,201 46	\$4,316,557 56

## FEDERAL APPROPRIATIONS AND EXPENDITURES.

Federal appropriations and expenditures for improvement of rivers and harbors in Massachusetts from the establishment of the government to the close of the fiscal year ending June 30, 1920, as shown in the following tables, furnished by the Chief of Engineers, U. S. A.: —

TABLE NO. 1. — *Localities at Present under Improvement.*

[Compiled from the annual report of the Chief of Engineers, U. S. A., for the fiscal year ending June 30, 1920.]

LOCALITY.	Expenditures.	Appropriations.
Newburyport Harbor . . . . .	\$494,059 85	\$494,100 00
Merrimack River . . . . .	404,388 92	414,466 72 <sup>1</sup>
Sandy Bay, Cape Ann, harbor of refuge . . . . .	1,941,478 00	1,950,000 00
Gloucester Harbor . . . . .	538,183 00	542,083 00
Beverly Harbor . . . . .	49,125 00	110,625 00
Salem Harbor . . . . .	71,368 66	71,368 66 <sup>2</sup>
Lynn Harbor . . . . .	471,000 77	476,837 00
Mystic River (upper portion) <sup>3</sup> . . . . .	305,031 34	336,050 00
Mystic River (below mouth of Island End River) <sup>3</sup> . . . . .		
Malden River . . . . .	71,285 18	149,950 00
Boston Harbor <sup>4</sup> . . . . .	12,572,068 13	12,675,827 58
Dorchester Bay and Neponset River . . . . .	95,008 00	95,233 00
Weymouth Fore River . . . . .	439,569 05	573,750 00
Weymouth Back River . . . . .	26,500 00	27,000 00
Plymouth Harbor . . . . .	363,868 69	391,959 80
Provincetown Harbor . . . . .	348,062 72	362,162 97
Pollock Rip Shoals, Nantucket Sound . . . . .	443,785 22	665,000 00
Nantucket Harbor of refuge . . . . .	574,797 95	586,473 50
New Bedford and Fairhaven Harbors . . . . .	769,310 00	769,310 00
Taunton River . . . . .	201,888 76	210,189 18
Fall River Harbor . . . . .	380,911 49	380,911 49
Totals . . . . .	\$20,561,690 73	\$21,283,297 90

<sup>1</sup> Of original amount appropriated, \$900 was carried to the surplus fund of the treasury from previous project.

<sup>2</sup> Of original amount appropriated, \$1,131.34 was carried to the surplus fund of the treasury.

<sup>3</sup> Now consolidated as one improvement.

<sup>4</sup> Including Chelsea Creek.



TABLE NO. 2. — *Localities in which Work is not now in Progress.*

[Compiled from data furnished by the United States Treasury Department and the Chief of Engineers, U. S. A.]

LOCALITY.	Expenditures.	Appropriations.
Bass River . . . . .	\$20,150 34	\$20,150 41
Buzzards Bay Harbor . . . . .	2,500 00	2,500 00
Canapitset Channel . . . . .	5,312 54	9,800 00
Chatham Harbor . . . . .	12,171 36	13,732 79
Cohasset Harbor . . . . .	10,000 00	10,000 00
Duxbury Harbor . . . . .	37,000 00	37,000 00
East Dennis Breakwater . . . . .	7 57	1,500 00
Edgartown Harbor . . . . .	25,000 00	25,000 00
Essex River . . . . .	30,000 00	30,000 00
Hingham Harbor . . . . .	38,316 58	39,000 00
Hyannis Harbor . . . . .	221,787 75	221,267 07
Ipswich River . . . . .	5,617 91	7,500 00
Kingston Harbor . . . . .	8,940 09	10,000 00
Little Harbor, Woods Hole . . . . .	18,000 00	18,000 00
Manchester Harbor . . . . .	23,985 57	24,300 00
Marblehead Harbor . . . . .	833 42	1,900 00
Marthas Vineyard Harbor . . . . .	7,000 00	7,000 00
Powow River . . . . .	50,940 72	51,000 00
Rockport Harbor . . . . .	91,229 25	91,232 57
Scituate Harbor . . . . .	104,590 98	104,680 00
Town River . . . . .	37,577 41	37,577 41
Vineyard Haven Harbor . . . . .	55,387 35	60,000 00
Wareham Harbor . . . . .	95,997 30	96,236 00
Wellfleet Harbor . . . . .	11,365 57	16,000 00
Westport Harbor and River . . . . .	3,000 00	3,000 00
Winthrop Harbor . . . . .	9,000 00	9,000 00
Woods Hole Channel . . . . .	343,599 92	344,000 00
Totals . . . . .	\$1,269,311 63	\$1,291,376 25

RECAPITULATION.	Expenditures.	Appropriations.
Total of Table No. 1 . . . . .	\$20,561,690 73	\$21,283,297 90
Total of Table No. 2 . . . . .	1,269,311 63	1,291,376 25
Grand totals . . . . .	\$21,831,002 36	\$22,574,674 15

# EXPENDITURES ON BOSTON HARBOR AND ITS TRIBUTARIES TO JUNE 30, 1920.

[The tributaries given are those now under improvement, and do not include tributaries heretofore improved.]

LOCALITY.	Expenditures.	Appropriations.
Boston Harbor proper <sup>1</sup> . . . . .	\$12,572,068 13	\$12,675,827 58
Mystic River (below mouth of Island End River) <sup>2</sup> . . . . .	} 305,031 34	336,050 00
Mystic River (upper portion) <sup>2</sup> . . . . .		
Malden River . . . . .	71,285 18	149,950 00
Totals . . . . .	\$12,948,384 65	\$13,161,827 58

<sup>1</sup> Including Chelsea Creek.

<sup>2</sup> Now one improvement.

## CONTRACTS AWARDED BY THE DIRECTORS OF THE PORT OF BOSTON

Contract No.	WORK.	Contractor.	Date.
51	Reclamation of flats at East Boston	Atlantic, Gulf and Pacific Company.	Mar. 14, 1916

## CONTRACTS MADE BY THE COMMISSION ON WATERWAYS AND PUBLIC

Contract No.	WORK.	Contractor.	Date.
9	Extension of contract No. 51 (Directors of the Port of Boston) for dredging and filling at East Boston.	Atlantic, Gulf and Pacific Company.	Oct. 6, 1916
31	Houghs Neck, Quincy, sea wall . . .	Dennis F. Crowley . . .	Sept. 18, 1917
75	Dry Dock Avenue, South Boston, paving.	Coleman Brothers . . .	May 12, 1919
78	Gloucester Harbor, dredging . . .	Boston Dredging Company . .	July 28, 1919
80	Popponeset Bay and West Bay, dredging.	John R. Burke . . .	June 16, 1919
86	Lynn Harbor and Saugus River, dredging.	Bay State Dredging and Contracting Company.	July 28, 1919
88	East Boston, bulkhead . . .	W. S. Rendle . . .	Sept. 3, 1919
91	Dry Dock, South Boston, dredging approach.	Boston Dredging Company . .	Aug. 20, 1919
93	Weir River, Boston Harbor, dredging.	Bay State Dredging and Contracting Company.	Sept. 15, 1919
95	Orient Heights, East Boston, dredging.	Gerrish Dredging Company . .	Oct. 3, 1919
96	Waquoit Bay, Falmouth and Mashpee, repairing breakwater.	E. S. Belden & Sons, Incorporated.	Oct. 29, 1919
97	South Boston, industrial tracks south of Summer Street.	J. F. Kennedy & Co. . .	Nov. 24, 1919
98	New Bedford State Pier, fire sprinklers.	General Fire Extinguisher Company.	Nov. 26, 1919
99	New Bedford State pier, freight elevator.	F. S. Payne Company . . .	Nov. 26, 1919

## AND IN FORCE DURING THE YEAR ENDING NOV. 30, 1920.

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1920.	Total paid to Nov. 30, 1920.	Estimated Amount of Contract.
Completed Nov. 27, 1920.	15.47 cents per cubic yard . . .	\$391,075 92	\$1,336,156 68	\$1,338,322 95 <sup>1</sup>

<sup>1</sup> Includes extension of original contract.

## LANDS AND IN FORCE DURING THE YEAR ENDING NOV. 30, 1920.

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1920.	Total paid to Nov. 30, 1920.	Estimated Amount of Contract.
Completed Nov. 27, 1920.	15.47 cents per cubic yard . . .	-1	-1	-1
Completed June 19, 1920.	Unit prices . . . . .	\$12,510 81	\$17,950 81	\$14,576 50
Completed Dec. 13, 1919.	Unit prices . . . . .	45,154 31	173,929 13	149,103 00
In progress . . .	Unit prices . . . . .	16,448 57	52,217 06	38,000 00
Completed Aug. 3, 1920.	For dredging, 63½ cents per cubic yard, measured <i>in situ</i> . For excavating boulders, \$12.50 per cubic yard.	15,395 36	32,484 92	35,000 00
Completed Dec. 4, 1919.	For dredging, 67 cents per cubic yard, scow measurement. For excavating boulders, \$20 per cubic yard.	13,874 73	67,132 66	30,150 00
Completed Dec. 20, 1919.	\$44.45 per linear foot of completed bulkhead.	23,778 60	72,364 60	71,120 00
Completed July 28, 1920.	For dredging, 65 cents per cubic yard, measured in scows.	25,331 35	136,528 60	130,000 00
Completed Nov. 27, 1920.	For dredging, 53 cents per cubic yard, measured in scows.	84,692 68	118,539 65	100,700 00
Completed Aug. 28, 1920.	For dredging, 33 cents per cubic yard, measured in place.	15,107 50	27,169 00	40,000 00
Completed June 7, 1920.	For furnishing and placing stone, \$7.50 per ton.	8,876 84	10,608 23	4,500 00
Completed May 21, 1920.	Unit prices . . . . .	9,181 63	9,181 63	9,275 25
Completed April 25, 1920.	For furnishing and installing sprinklers and fire extinguishing apparatus, \$6.921. For furnishing and installing a pipe connection, \$417. For furnishing additional sprinklers, \$5.50 per sprinkler.	7,523 51	7,523 51	7,338 00
Completed Sept. 17, 1920.	Lump sum of \$4,796 . . . .	4,796 00	4,796 00	4,796 00

<sup>1</sup> See contract No. 51.

CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION  
YEAR ENDING

Contract No.	WORK.	Contractor.	Date.
1	Mystic River, dredging at Island End River.	Bay State Dredging and Contracting Company.	Dec. 11, 1919
2	Mystic River, dredging at Malden bridge.	Boston Dredging Company .	Dec. 8, 1919
3	North Scituate, concrete sea wall .	William H. Connor . . .	Feb. 24, 1920
4	East Boston, filling back of bulk-head.	John R. Burke . . .	Feb. 13, 1920
5	Dry Dock, South Boston, clearing entrance channel.	George T. Rendle Company .	April 9, 1920
6	Scituate Harbor, dredging . .	Bay State Dredging and Contracting Company.	May 24, 1920
7	East Bay, Barnstable, dredging .	Bay State Dredging and Contracting Company.	June 28, 1920
8	West Bay, Barnstable, dredging .	Bay State Dredging and Contracting Company.	July 1, 1920
9	Herring River, Witchmere Harbor, Bass River, redredging channels.	Bay State Dredging and Contracting Company.	June 3, 1920
10	Falmouth Inner Harbor, dredging .	Bay State Dredging and Contracting Company.	June 3, 1920
12	Haywards Creek, dredging and filling.	Bay State Dredging and Contracting Company.	May 10, 1920
13	Ellisville Harbor, Plymouth, excavating channel.	George A. Finney and P. H. Marsh.	May 10, 1920
14	Acushnet River, dredging . .	Bay State Dredging and Contracting Company.	Aug. 2, 1920
15	East Boston, dredging at Jeffries Yacht Club.	Bay State Dredging and Contracting Company.	June 8, 1920
16	Bullock Street, South Boston, paving.	B. E. Grant Company . .	July 19, 1920
17	Winthrop Harbor, dredging . .	Bay State Dredging and Contracting Company.	Sept. 10, 1920



OF WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE  
Nov. 30, 1920.

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1920.	Total paid to Nov. 30, 1920.	Estimated Amount of Contract.
Completed March 30, 1920.	Dredging, 65 cents per cubic yard, measured in scows.	\$73,340 80	\$73,340 80	\$69,550 00
Completed July 1, 1920.	Dredging, 50 cents per cubic yard, measured in scows.	54,125 00	54,125 00	47,500 00
Completed Aug. 12, 1920.	For furnishing materials and building wall, \$14 per cubic yard of concrete measured in place in completed work. For additional material for filling back of wall, \$2 per cubic yard of material in place.	14,730 33	14,730 33	10,120 00
Completed May 28, 1920.	\$22.90 per hour of work by the dredge.	13,224 75	13,224 75	20,000 00
Completed July 23, 1920.	Lump sum of \$12,600 . . .	12,600 00	12,600 00	12,600 00
Completed July 20, 1920.	Dredging, 59.8 cents per cubic yard, measured in scows. Excavating boulders, \$20 per cubic yard.	30,030 95	30,030 95	29,900 00
Completed Oct. 22, 1920.	Dredging, 78 cents per cubic yard, measured in scows. Excavating boulders, \$20 per cubic yard.	42,017 65	42,017 65	36,660 00
In progress . .	Dredging, 78 cents per cubic yard, measured in scows. Excavating boulders, \$20 per cubic yard.	7,397 75	7,397 75	31,200 00
Work at Bass River completed Aug. 3, 1920.	Dredging, \$1.20 per cubic yard, measured in scows. For excavating boulders, \$20 per cubic yard.	14,404 80	14,404 80	14,000 00
Completed July 9, 1920.	Dredging, 58 cents per cubic yard, measured in scows. Excavating boulders, \$12 per cubic yard.	9,368 74	9,368 74	9,280 00
Completed Aug. 13, 1920.	For material excavated by hydraulic dredge, 38 cents per cubic yard, measured by cross section in excavation. For material excavated by dipper dredge, 65 cents per cubic yard, measured in scows.	98,773 56	98,773 56	80,000 00
Completed July 31, 1920.	Lump sum of \$1,000 . . .	1,000 00	1,000 00	1,000 00
In progress . .	Dredging, 52 cents per cubic yard, measured in scows. Excavating boulders, \$16 per cubic yard.	72,596 56	72,596 56	112,320 00
Completed July 31, 1920.	Dredging, 50 cents per cubic yard, measured in scows.	1,728 50	1,728 50	1,800 00
Completed Dec. 1, 1920.	Unit prices . . . . .	45,727 87	45,727 87	52,345 00
In progress . .	Dredging, 47.9 cents per cubic yard, scow measurement.	-	-	12,100 00

CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION  
YEAR ENDING

Contract No.	WORK.	Contractor.	Date.
18	Lobster Cove, Gloucester and Newburyport Harbor, dredging basins.	Bay State Dredging and Contracting Company.	Sept. 1, 1920
20	Brant Rock, Marshfield, spur jetties	William H. Connor . . .	Sept. 10, 1920

OF WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE  
Nov. 30, 1920 — *Concluded.*

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1920.	Total paid to Nov. 30, 1920.	Estimated Amount of Contract.
Work at Lobster Cove completed Oct. 2, 1920.	Dredging at Lobster Cove, 65 cents per cubic yard, scow measurement. Excavating boulders at Lobster Cove, \$18 per cubic yard. Dredging at Newburyport Harbor, \$1.65 per cubic yard, scow measurement. Excavating boulders at Newburyport Harbor, \$18 per cubic yard.	\$14,931 15	\$14,931 15	\$15,000 00
Completed Oct. 25, 1920.	For furnishing materials and building jetties, \$21.50 per cubic yard of concrete measured in place in the completed work.	2,832 62	2,832 62	3,332 50



## DEERFIELD RIVER, AT CHARLEMONT, MASS.

*Summary of Daily and Monthly Discharge for the Seven-year Period ending Sept. 30, 1920.*

[Drainage area, 362 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH CORRECTED FOR STORAGE IN SOMERSET RESERVOIR.						Run-off Depth in Inches (Average for Seven Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR SEVEN YEARS.				
	Highest	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.			
October . . . . .	5,400	257	14.90	.710	304	29	.840	.080	765	102	2.11	.282	513	1.42	1.64
November . . . . .	11,000	889	30.40	2.460	425	41	1.170	.113	1,540	210	4.25	.580	790	2.18	2.43
December . . . . .	4,880	304	13.50	.840	305	43	.843	.119	1,130	159	3.12	.439	673	1.86	2.14
January . . . . .	7,170	720	19.80	1.990	370	60	1.020	.166	1,380	139	3.81	.384	581	1.60	1.84
February . . . . .	12,100	750	33.40	2.070	340	50	.939	.138	1,520	130	4.20	.359	645	1.78	1.87
March . . . . .	14,000	1,060	38.70	2.930	540	122	1.490	.337	2,280	542	6.30	1.500	1,438	3.97	4.58
April . . . . .	15,700	6,000	43.40	16.600	1,250	383	3.450	1.060	4,430	1,700	12.20	4.700	2,821	7.79	8.69
May . . . . .	13,700	985	37.80	2.720	800	138	2.210	.381	2,160	451	5.97	1.250	1,327	3.67	4.23
June . . . . .	5,400	362	14.90	1.000	394	68	1.090	.188	994	126	2.75	.348	563	1.56	1.74
July . . . . .	12,200	425	33.70	1.170	305	46	.843	.127	1,700	113	4.70	.312	491	1.36	1.57
August . . . . .	7,020	659	19.40	1.820	283	64	.782	.177	1,270	105	3.51	.290	373	1.03	1.19
September . . . . .	3,500	451	9.67	1.250	254	30	.702	.083	843	65	2.33	.180	367	1.01	1.13
The year . . . . .	15,700	6,500	43.40	18.000	191	29	.528	.080	1,020	735	2.82	2.030	879	2.43	33.05



## FARMINGTON RIVER NEAR NEW BOSTON, MASS.

*Summary of Daily and Monthly Discharge for the Seven-year Period ending Sept. 30, 1920.*

[Drainage area, 92.7 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches for Seven Years).
	SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR SEVEN YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- foot.	Second- foot per Square Mile.			
October . . . . .	950	65	10.20	.701	4.6	7.0	.050	.076	136	19.9	1.47	.215	88.3	.953	1.10
November . . . . .	744	49	8.03	.529	74.0	12.0	.798	.130	209	27.0	2.25	.291	113.0	1.220	1.36
December . . . . .	1,060	60	11.40	.647	74.0	9.0	.798	.097	252	31.1	2.72	.335	126.0	1.360	1.57
January . . . . .	1,140	90	12.30	.971	131.0	9.0	1.410	.097	349	39.9	3.76	.431	165.0	1.780	2.05
February . . . . .	2,000	88	21.60	.949	112.0	9.0	1.210	.097	319	46.4	3.44	.501	158.0	1.700	1.79
March . . . . .	1,900	269	20.50	2.900	210.0	60.0	2.270	.647	534	100.0	5.76	1.080	320.0	3.450	3.98
April . . . . .	1,310	600	14.10	6.470	356.0	77.0	3.840	.831	646	195.0	6.97	2.100	418.0	4.510	5.03
May . . . . .	1,750	197	18.90	2.130	118.0	66.0	1.270	.712	411	115.0	4.43	1.240	207.0	2.230	2.57
June . . . . .	882	114	9.51	1.230	82.0	31.0	.885	.334	164	66.8	1.77	.721	108.0	1.170	1.30
July . . . . .	1,700	94	18.30	1.010	63.0	27.0	.680	.291	240	59.1	2.59	.638	107.0	1.150	1.33
August . . . . .	1,060	122	11.40	1.320	93.0	31.0	1.000	.334	188	88.0	2.03	.949	120.0	1.290	1.49
September . . . . .	758	122	8.18	1.320	55.0	9.6	.593	.104	132	57.9	1.42	.625	94.6	1.020	1.14
The year . . . . .	2,000	840	21.60	9.060	35.0	7.0	.378	.076	217	131.0	2.34	1.410	169.0	1.820	24.71

## HOUSATONIC RIVER AT FALLS VILLAGE, CONN.

*Summary of Daily and Monthly Discharge for the Eight-year Period, ending Sept. 30, 1920.*

[Drainage area, 644 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.				Run-off Depth in Inches for (Average for Eight Years).		
	SECOND-Feet.		SECOND-Feet PER SQUARE MILE.		SECOND-Feet.		SECOND-Feet PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR EIGHT YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.			
October . . . . .	4,510	169	7.00	.262	193	24	.300	.037	726	122	1.130	.189	421	.654	.75
November . . . . .	2,800	160	4.35	.248	632	29	.981	.045	1,240	117	1.930	.132	692	1.070	1.19
December . . . . .	5,670	157	8.80	.244	845	50	1.310	.078	1,730	131	2.690	.203	977	1.520	1.75
January . . . . .	4,770	450	7.41	.699	1,290	25	2.000	.039	2,300	248	3.570	.385	1,140	1.770	2.04
February . . . . .	5,850	340	9.08	.528	1,000	140	1.550	.217	2,030	267	3.150	.415	1,050	1.630	1.71
March . . . . .	8,520	2,760	13.20	4.290	1,850	135	2.870	.210	2,910	884	4.520	1.370	2,150	3.340	3.85
April . . . . .	6,720	2,850	10.40	4.430	2,750	432	4.270	.671	3,820	1,110	5.930	1.720	2,700	4.190	4.68
May . . . . .	3,430	920	5.33	1.430	1,120	325	1.740	.505	1,830	614	2.840	.933	1,270	1.970	2.27
June . . . . .	2,550	560	3.96	.870	280	96	.435	.149	1,030	332	1.600	.516	638	.991	1.11
July . . . . .	4,480	328	6.96	.509	340	50	.528	.078	1,430	193	2.220	.300	575	.893	1.03
August . . . . .	3,320	214	5.16	.332	529	40	.821	.062	1,320	157	2.050	.244	452	.702	.81
September . . . . .	1,780	252	2.76	.391	350	29	.543	.045	605	181	.939	.281	373	.579	.65
The year . . . . .	8,520	3,600	13.20	5.590	136	24	.211	.037	1,290	795	2.000	1.230	1,040	1.610	21.84

## HOUSATONIC RIVER AT GREAT BARRINGTON, MASS.

*Summary of Daily and Monthly Discharge for the Seven-year Period ending Sept. 30, 1920.*

[Drainage area, 280 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Seven Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR SEVEN YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet. Second- feet per Square Mile.	Second- feet per Square Mile.			
October . . . . .	1,580	165	5.64	.589	75	1.0	.268	.004	273	80.9	.975	.289	187	.668	.77
November . . . . .	1,730	195	6.18	.696	215	10.0	.768	.036	816	106.0	2.910	.379	323	1.150	1.28
December . . . . .	3,700	195	13.20	.696	250	17.0	.893	.061	842	112.0	3.010	.400	477	1.700	1.96
January . . . . .	3,140	380	11.20	1.360	340	21.0	1.210	.075	1,000	118.0	3.570	.421	451	1.610	1.86
February . . . . .	3,640	335	13.00	1.200	390	11.0	1.390	.039	954	208.0	3.410	.743	475	1.700	1.79
March . . . . .	5,070	980	18.10	3.500	600	58.0	2.140	.207	1,590	429.0	5.680	1.530	1,050	3.750	4.32
April . . . . .	4,300	1,810	15.40	6.460	1,420	130.0	5.070	.464	2,650	603.0	9.460	2.150	1,530	5.460	6.09
May . . . . .	2,470	420	8.82	1.500	540	97.0	1.930	.346	1,050	309.0	3.750	1.100	654	2.340	2.70
June . . . . .	1,130	240	4.04	.857	255	8.0	.911	.029	497	138.0	1.780	.403	308	1.100	1.23
July . . . . .	4,110	250	14.70	.893	150	2.6	.536	.009	755	143.0	2.700	.511	307	1.100	1.27
August . . . . .	1,340	190	4.79	.679	69	13.0	.246	.046	462	123.0	1.650	.439	204	.729	.84
September . . . . .	690	220	2.46	.786	75	15.0	.268	.054	269	129.0	.961	.461	193	.689	.77
The year . . . . .	5,070	2,470	18.10	8.820	48	1.0	.171	.004	695	382.0	2.480	1.360	514	1.840	24.88

## MILLERS RIVER AT ERVING, MASS.

## Summary of Daily and Monthly Discharge for the Six-year Period ending Sept. 30, 1920.

[Drainage area, 372 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Six Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR SIX YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.					
October . . . . .	1,730	180	4.65	.484	90	27	.242	.073	359	119.0	.965	.320	259	.696	.80
November . . . . .	2,100	190	5.65	.511	120	20	.323	.054	765	103.0	2.060	.277	383	1.030	1.15
December . . . . .	2,410	180	6.48	.484	360	9	.968	.024	774	82.5	2.080	.222	492	1.320	1.52
January . . . . .	1,870	300	5.03	.806	450	8	1.210	.022	922	178.0	2.480	.478	544	1.460	1.68
February . . . . .	3,850	280	10.30	.753	450	55	1.210	.148	1,010	165.0	2.720	.444	566	1.520	1.60
March . . . . .	5,500	1,100	14.80	2.960	610	86	1.640	.231	1,890	530.0	5.080	1.420	1,280	3.440	3.97
April . . . . .	4,250	1,880	11.40	5.050	1,360	245	3.660	.659	2,770	695.0	7.450	1.870	1,560	4.180	4.66
May . . . . .	3,470	1,200	9.33	3.230	535	162	1.440	.435	1,230	518.0	3.310	1.390	878	2.360	2.72
June . . . . .	1,880	366	5.05	.984	435	85	1.176	.228	842	196.0	2.260	.511	561	1.510	1.68
July . . . . .	2,560	385	6.88	1.030	284	31	.763	.083	742	222.0	1.990	.507	413	1.110	1.28
August . . . . .	2,730	260	7.34	.699	209	14	.562	.038	843	150.0	2.270	.403	375	1.010	1.16
September . . . . .	1,340	395	3.60	1.060	116	22	.312	.059	465	230.0	1.250	.618	311	.836	.93
The year . . . . .	5,500	2,810	14.80	7.550	63	8	.169	.022	811	471.0	2.180	1.270	634	1.700	23.15

## MILLERS RIVER NEAR WINCHENDON, MASS.

*Summary of Daily and Monthly Discharge for the Three-year Period ending Sept. 30, 1920.*

[Drainage area, 80 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Three Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR TEN YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet. Square Mile.	Second- feet per Square Mile.			
October . . . .	400	116	5.00	1.450	25	11	.312	.138	69.7	56.0	.871	.700	61.3	.766	.88
November . . . .	462	193	5.78	2.410	32	12	.400	.150	155.0	83.6	1.940	1.040	108.0	1.350	1.51
December . . . .	452	145	5.65	1.810	59	13	.738	.162	143.0	62.7	1.790	.784	108.0	1.350	1.56
January . . . .	215	78	2.69	.975	104	13	1.300	.162	159.0	44.4	1.990	.555	88.0	1.100	1.27
February . . . .	345	84	4.31	1.050	21	15	.262	.188	124.0	45.3	1.550	.566	87.4	1.090	1.15
March . . . .	952	555	11.90	6.940	160	84	2.000	1.050	397.0	293.0	4.960	3.660	338.0	4.220	4.86
April . . . .	965	539	12.10	6.740	293	113	3.660	1.410	637.0	266.0	7.960	3.320	416.0	5.200	5.80
May . . . .	1,060	270	13.20	3.380	139	37	1.740	.462	328.0	115.0	4.100	1.440	230.0	2.880	3.32
June . . . .	290	158	3.62	1.980	53	18	.662	.225	145.0	96.1	1.810	1.200	113.0	1.410	1.57
July . . . .	144	108	1.80	1.350	24	16	.300	.200	75.7	62.5	.946	.781	70.5	.881	1.02
August . . . .	148	86	1.85	1.080	21	14	.262	.175	80.8	55.5	1.010	.694	65.0	.812	.94
September . . . .	365	140	4.56	1.750	18	11	.225	.138	83.0	64.9	1.040	.811	75.8	.948	1.06
The year . . . .	1,060	620	13.20	7.750	13	11	.162	.138	176.0	122.0	2.200	1.520	147.0	1.840	24.94



## EAST BRANCH OF TULLY RIVER NEAR ATHOL, MASS.

*Summary of Daily and Monthly Discharge for the Four-year Period ending Sept. 30, 1920.*

[Drainage area, 50.2 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Four Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR FOUR YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.					
October . . . . .	425	80	8.47	1.590	27.0	10.0	.538	.199	50.5	26.40	1.010	.526	43.5	.867	1.00
November . . . . .	401	155	7.99	3.090	77.0	23.0	1.530	.458	143.0	53.90	2.850	1.070	85.7	1.710	1.91
December . . . . .	320	48	6.38	.956	47.0	23.0	.936	.458	131.0	35.50	2.610	.707	94.0	1.870	2.16
January . . . . .	218	34	4.34	.677	71.0	16.0	1.410	.319	128.0	22.90	2.550	.456	64.4	1.280	1.48
February . . . . .	202	27	4.02	.538	29.0	18.0	.578	.359	64.5	23.70	1.280	.472	44.4	.884	.93
March . . . . .	975	437	19.40	8.710	99.0	24.0	1.970	.478	293.0	191.00	5.840	3.800	237.0	4.720	5.44
April . . . . .	677	279	13.50	5.560	218.0	72.0	4.340	1.430	420.0	169.00	8.370	3.370	264.0	5.260	5.87
May . . . . .	465	165	9.26	3.290	67.0	35.0	1.330	.697	170.0	84.00	3.390	1.670	131.0	2.610	3.01
June . . . . .	282	79	5.62	1.570	51.0	9.8	1.020	.195	121.0	28.40	2.410	.566	72.0	1.430	1.60
July . . . . .	61	50	1.22	.996	12.0	6.1	.239	.122	31.2	14.00	.622	.279	23.6	.470	.54
August . . . . .	413	7	8.23	.139	10.0	2.2	.199	.044	84.8	4.64	1.690	.092	39.8	.793	.91
September . . . . .	320	59	6.38	1.180	12.0	3.8	.239	.076	59.2	24.10	1.180	.480	41.4	.825	.92
The year . . . . .	975	565	19.40	11.300	9.2	2.2	.183	.044	119.0	81.00	2.370	1.610	95.3	1.900	25.71

## MOSS BROOK AT WENDELL DEPOT, MASS.

## Summary of Daily and Monthly Discharge for the Four-year Period ending Sept. 30, 1920.

[Drainage area, 12.2 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Four Years).
	SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR FOUR YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- foot. Second- foot per Square Mile.	Second- foot per Square Mile.			
October . . . . .	91	10.0	7.46	.820	3.4	1.9	.279	.156	10.00	5.24	.820	.430	7.22	.592	.68
November . . . . .	101	30.0	8.28	2.460	12.0	3.7	.984	.303	26.60	8.30	2.180	.680	14.70	1.200	1.34
December . . . . .	74	10.0	6.07	.820	8.0	4.0	.656	.328	28.90	6.97	2.370	.571	19.70	1.610	1.86
January . . . . .	52	8.5	4.26	.697	12.0	4.0	.984	.328	23.90	5.21	1.960	.427	13.40	1.100	1.27
February . . . . .	68	10.0	5.57	.820	8.2	4.0	.672	.328	18.00	7.92	1.480	.649	13.00	1.070	1.12
March . . . . .	190	106.0	15.60	8.690	30.0	7.1	2.460	.582	59.70	43.30	4.890	3.550	51.60	4.230	4.88
April . . . . .	162	72.0	13.30	5.900	56.0	20.0	4.590	1.640	91.40	38.60	7.490	3.160	55.50	4.550	5.08
May . . . . .	113	50.0	9.26	4.100	82.0	14.0	6.720	1.150	51.20	20.70	4.200	1.700	35.70	2.930	3.38
June . . . . .	102	17.0	8.36	1.390	14.0	1.9	1.150	.156	31.60	7.39	2.590	.606	19.50	1.600	1.78
July . . . . .	42	11.0	3.44	.902	3.2	1.4	.262	.115	11.20	3.27	.918	.268	7.23	.593	.68
August . . . . .	45	2.7	3.69	.221	2.2	.8	.180	.066	7.82	1.45	.641	.119	4.38	.359	.41
September . . . . .	87	19.0	7.13	1.560	2.9	1.1	.238	.090	8.46	3.41	.693	.280	6.25	.512	.57
The year . . . . .	190	106.0	15.60	8.690	2.0	.8	.164	.066	27.80	16.20	2.280	1.330	20.70	1.700	23.05

PRIEST BROOK NEAR WINCHENDON, MASS.  
*Summary of Daily and Monthly Discharge for the Three-year Period, 1916-17 and 1918-20.*  
 [Drainage area, 18.8 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Three Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR THREE YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet. Second- feet per Square Mile.	Second- feet per Square Mile.			
October . . . .	54	37.0	2.87	1.970	12.0	2.5	.638	.133	21.4	8.70	1.140	.463	16.90	.899	1.04
November . . . .	140	67.0	7.45	3.560	15.0	4.8	.798	.255	48.8	20.10	2.600	1.070	30.80	1.640	1.83
December . . . .	131	71.0	6.97	3.780	13.0	9.7	.691	.516	56.0	30.10	2.980	1.600	40.00	2.130	2.46
January . . . .	106	12.0	5.64	.638	16.0	4.4	.851	.234	36.9	6.70	1.960	.356	22.80	1.210	1.40
February . . . .	54	10.0	2.87	.532	7.0	5.3	.372	.282	13.9	8.10	.686	.431	10.90	.579	.61
March . . . .	500	299.0	26.60	15.900	33.0	7.9	1.760	.420	134.0	84.10	7.130	4.470	112.00	5.960	6.87
April . . . .	309	150.0	16.40	7.980	78.0	26.0	4.150	1.380	179.0	67.00	9.520	3.560	107.00	5.690	6.35
May . . . .	297	61.0	15.80	3.240	18.0	16.0	.957	.851	84.5	35.60	4.490	1.890	61.80	3.290	3.79
June . . . .	122	33.0	6.49	1.760	20.0	2.7	1.060	.144	47.3	14.50	2.520	.771	33.10	1.760	1.96
July . . . .	29	20.0	1.54	1.060	4.0	2.1	.213	.112	11.9	4.64	.633	.247	8.98	.478	.55
August . . . .	206	2.5	11.0	.133	4.4	1.6	.234	.085	39.9	1.97	2.120	.105	23.90	1.270	1.46
September . . . .	132	14.0	7.02	.745	2.8	2.2	.149	.117	22.3	7.27	1.190	.387	14.30	.761	.85
The year . . . .	500	299.0	26.60	15.900	2.5	1.6	.133	.085	48.1	35.80	2.560	1.900	40.40	2.150	29.17

## SIP POND BROOK NEAR WINCHENDON, MASS.

*Summary of Daily and Monthly Discharge for the Four-year Period ending Sept. 30, 1920.*

[Drainage area, 18.8 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Four Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR FOUR YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet. Second- feet per Square Mile.	Second- feet per Square Mile.			
October . . . . .	72	19.0	3.83	1.010	10	4.2	.532	.223	21.8	9.19	1.16	.489	16.5	.878	1.01
November . . . . .	99	32.0	5.27	1.700	14	2.4	.745	.128	34.6	18.90	1.84	1.000	24.8	1.320	1.47
December . . . . .	91	30.0	4.84	1.600	12	6.4	.638	.340	37.4	18.50	1.99	.984	30.5	1.620	1.87
January . . . . .	74	24.0	3.94	1.280	14	8.0	.745	.426	35.4	13.50	1.88	.718	23.3	1.240	1.43
February . . . . .	80	22.0	4.26	1.170	7	3.0	.372	.160	20.2	10.00	1.07	.532	17.0	.904	.95
March . . . . .	300	140.0	16.00	7.450	30	5.0	1.600	.266	99.4	62.10	5.29	3.300	77.0	4.100	4.73
April . . . . .	249	107.0	13.20	5.660	92	3.0	4.890	.166	162.0	62.90	8.62	3.350	98.4	5.230	5.84
May . . . . .	327	55.0	17.40	2.930	28	14.0	1.490	.745	78.8	27.60	4.19	1.470	52.5	2.790	3.22
June . . . . .	86	49.0	4.57	2.610	21	2.8	1.120	.149	42.6	16.20	2.27	.862	27.8	1.480	1.65
July . . . . .	24	9.3	1.28	.495	10	1.9	.532	.101	17.7	5.66	9.41	.301	11.5	.612	.70
August . . . . .	176	3.5	9.36	.186	9	1.1	4.790	.058	43.5	1.96	2.31	.104	16.4	.872	1.00
September . . . . .	120	17.0	6.38	.904	10	1.9	.532	.101	26.1	7.60	1.39	.404	16.5	.878	.98
The year . . . . .	327	205.0	17.40	10.900	7	1.1	.372	.058	40.8	29.70	2.17	1.580	34.4	1.830	24.85

QUABOAG RIVER AT WEST BRIMFIELD, MASS.  
*Summary of Daily and Monthly Discharge for the Eight-year Period ending Sept. 30, 1920.*

[Drainage area, 150 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Eight Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR EIGHT YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet. Mile.	Second- feet per Square Mile.			
October . . . . .	265	67	1.77	.447	142	16	.947	.107	191	34.5	1.27	.230	94	.627	.72
November . . . . .	621	69	4.14	.460	181	13	1.210	.087	357	42.6	2.38	.284	131	.873	.97
December . . . . .	558	165	3.72	1.100	165	30	1.100	.200	370	61.0	2.47	.407	158	1.050	1.21
January . . . . .	1,020	165	6.80	1.100	226	18	1.510	.120	528	85.2	3.52	.568	249	1.660	1.91
February . . . . .	840	180	5.60	1.200	193	50	1.290	.333	433	134.0	2.89	.893	228	1.520	1.60
March . . . . .	1,890	620	12.60	4.130	485	54	3.230	.360	917	245.0	6.11	1.630	564	3.760	4.34
April . . . . .	1,350	246	9.00	1.640	576	120	3.840	.800	866	173.0	5.77	1.150	566	3.770	4.21
May . . . . .	726	148	4.84	.987	364	81	2.430	.540	529	115.0	3.53	.767	323	2.150	2.48
June . . . . .	656	113	4.37	.753	220	32	1.470	.213	368	63.4	2.45	.423	191	1.270	1.42
July . . . . .	620	77	4.13	.513	144	24	.960	.160	241	52.3	1.61	.349	132	.880	1.02
August . . . . .	455	70	3.03	.467	140	11	.933	.073	251	40.0	1.67	.267	115	.767	.88
September . . . . .	415	76	2.77	.507	110	14	.733	.093	275	45.0	1.83	.300	105	.700	.78
The year . . . . .	1,890	800	12.60	5.330	54	11	.360	.073	363	171.0	2.42	1.140	238	1.590	21.54



## SWIFT RIVER AT WEST WARE, MASS.

## Summary of Daily and Monthly Discharge for the Eight-year Period ending Sept. 30, 1920.

[Drainage area, 186 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Eight Years).
	SECOND-FOOT. Highest. Lowest.		SECOND-FOOT PER SQUARE MILE. Highest. Lowest.		SECOND-FOOT. Highest. Lowest.		SECOND-FOOT PER SQUARE MILE. Highest. Lowest.		IN ANY YEAR. SECOND-FOOT PER SQUARE MILE. Highest. Lowest.		AVERAGE FOR EIGHT YEARS. Second- feet. Second- feet per Square Mile.				
October . . . . .	336	59	1.81	.317	126	23	.677	.124	169	40.8	.909	.219	114	.613	.71
November . . . . .	930	81	5.00	.435	190	38	1.020	.204	412	57.0	2.220	.306	173	.930	1.04
December . . . . .	1,100	76	5.91	.409	240	42	1.290	.226	461	58.1	2.480	.312	237	1.270	1.46
January . . . . .	1,180	150	6.34	.806	241	36	1.300	.194	429	109.0	2.310	.586	269	1.450	1.67
February . . . . .	2,200	230	11.80	1.240	210	84	1.130	.452	488	171.0	2.620	.919	270	1.450	1.52
March . . . . .	2,300	895	12.40	4.810	560	143	3.010	.769	974	254.0	5.240	1.370	648	3.480	4.01
April . . . . .	1,770	825	9.52	4.440	620	132	3.330	.710	1,070	317.0	5.750	1.700	719	3.870	4.32
May . . . . .	1,160	461	6.24	2.480	440	106	2.370	.570	591	224.0	3.180	1.200	418	2.250	2.59
June . . . . .	930	109	5.00	.586	255	56	1.370	.301	436	78.5	2.340	.422	255	1.370	1.53
July . . . . .	925	86	4.97	.462	164	35	.882	.188	351	58.1	1.890	.312	179	.962	1.11
August . . . . .	1,800	79	9.68	.425	186	24	1.000	.129	545	42.3	2.930	.227	167	.898	1.04
September . . . . .	504	84	2.71	.452	144	28	.774	.151	244	53.0	1.310	.285	129	.694	.77
The year . . . . .	2,300	1,080	12.40	5.810	94	23	.505	.124	412	233.0	2.220	1.250	298	1.600	21.77

## TAUNTON RIVER AT TITICUT RAILROAD STATION, MASS.

*Summary of Daily and Monthly Discharge for the Period from March to September, 1920.*

[Drainage area, 185 square miles.]

MONTH.	MAXIMUM DAY.		MINIMUM DAY.		MEAN DAILY DISCHARGE.		Run-off Depth in Inches.
	Second-feet.	Second-feet per Square Mile.	Second-feet.	Second-feet per Square Mile.	Second-feet.	Second-feet per Square Mile.	
March . . .	4,000	21.600	250	1.350	1,730.0	9.350	10.78
April . . .	1,230	6.650	460	2.490	789.0	4.260	4.75
May . . .	1,320	7.140	316	1.710	665.0	3.590	4.14
June . . .	1,510	8.160	338	1.830	753.0	4.070	4.54
July . . .	361	1.950	100	.541	191.0	1.030	1.19
August . . .	272	1.470	45	.243	122.0	.659	.76
September . . .	117	.632	42	.227	69.3	.375	.42

## WAPE RIVER AT GIBBS CROSSING, MASS.

*Summary of Daily and Monthly Discharge for the Eight-year Period ending Sept. 30, 1920.*

[Drainage area, 201 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.				Run-off Depth in Inches (Average for Eight Years).		
	SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR EIGHT YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- foot.	Second- foot per Square Mile.	Second- foot.	Second- foot per Square Mile.			
October . . . . .	420	82	2.09	.408	96	6.0	.478	.030	170	30.0	.846	.149	109	.542	.63
November . . . . .	1,360	85	6.77	.423	206	6.6	1.020	.033	539	34.3	2.680	.171	181	.900	1.00
December . . . . .	1,230	174	6.12	.866	200	20.0	.995	.100	479	60.7	2.380	.302	246	1.220	1.41
January . . . . .	2,370	260	11.80	1.290	238	25.0	1.180	.124	430	109.0	2.140	.542	295	1.470	1.70
February . . . . .	2,230	255	11.10	1.270	193	37.0	.960	.184	525	175.0	2.610	.871	298	1.480	1.56
March . . . . .	2,700	669	13.40	3.330	450	89.0	2.240	.443	1,150	226.0	5.720	1.120	777	3.870	4.46
April . . . . .	2,240	598	11.10	2.980	718	72.0	3.570	.358	1,120	240.0	5.570	1.190	747	3.720	4.15
May . . . . .	1,380	239	6.87	1.190	325	29.0	1.620	.144	570	156.0	2.840	.776	430	2.140	2.47
June . . . . .	970	148	4.83	.736	245	11.0	1.220	.055	496	65.0	2.470	.323	247	1.230	1.37
July . . . . .	1,640	138	8.16	.687	108	15.0	.537	.075	393	66.4	1.960	.330	171	.851	.98
August . . . . .	1,370	130	6.82	.647	114	16.0	.567	.080	416	60.3	2.070	.300	141	.701	.81
September . . . . .	1,120	92	5.57	.458	108	8.1	.537	.040	315	41.8	1.570	.208	123	.612	.68
The year . . . . .	2,700	1,120	13.40	5.570	28	6.0	.139	.030	424	207.0	2.110	1.030	314	1.560	21.22

WESTFIELD RIVER AT KNIGHTVILLE, MASS.  
*Summary of Daily and Monthly Discharge for the Eleven-year Period ending Sept. 30, 1920.*

[Drainage area, 162 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Eleven Years).
	SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR ELEVEN YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.					
October . . . .	2,720	33	16.80	.204	90	12	.556	.074	462	23.3	2.85	.144	145.0	.895	1.03
November . . . .	2,330	82	14.40	.506	207	19	1.280	.117	476	54.4	2.94	.336	237.0	1.460	1.63
December . . . .	2,280	157	14.10	.969	153	15	.949	.093	404	68.5	2.49	.423	245.0	1.510	1.74
January . . . .	5,130	130	31.70	.802	245	45	1.510	.278	643	86.2	3.97	.532	336.0	2.070	2.39
February . . . .	3,920	100	24.20	.617	192	27	1.190	.167	582	65.0	3.57	.401	262.0	1.620	1.70
March . . . .	4,860	470	30.00	2.900	350	36	2.160	.222	200	259.0	7.41	1.600	736.0	4.540	5.23
April . . . .	3,560	1,360	22.00	8.400	730	166	4.510	1.020	410	455.0	8.70	2.810	839.0	5.180	5.78
May . . . .	5,050	395	31.20	2.440	210	67	1.300	.414	810	167.0	5.00	1.030	379.0	2.340	2.70
June . . . .	2,140	104	13.20	.642	167	25	1.030	.154	533	60.9	3.29	.376	219.0	1.350	1.51
July . . . .	1,920	41	11.90	.253	97	12	.599	.079	386	20.7	2.38	.128	106.0	.654	.75
August . . . .	3,040	44	18.80	.272	116	4	.716	.025	498	15.7	3.07	.097	96.1	.593	.68
September . . . .	910	55	5.62	.340	68	8	.420	.049	174	19.1	1.07	.118	83.3	.514	.57
The year . . . .	5,130	1,780	31.70	11.000	62	4	.198	.025	379	174.0	2.34	1.070	307.0	1.890	25.68

## WESTFIELD RIVER NEAR WESTFIELD, MASS.

*Summary of Daily and Monthly Discharge for the Six-year Period ending Sept. 30, 1920.*

[Drainage area, 496 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH, CORRECTED FOR DIVERSION FROM WESTFIELD LITTLE RIVER.						Run-off Depth in Inches (Average for Six Years).
	SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR SIX YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.	Second- feet.	Second- feet per Square Mile.			
October . . . . .	3,600	260	7.26	5.240	248	61	.500	.123	554	130	1.120	.262	.681	.79	
November . . . . .	4,730	550	9.54	1.110	465	70	.938	.141	1,170	203	2.360	.409	1.120	1.25	
December . . . . .	4,650	352	9.38	.710	495	40	.998	.081	1,050	223	2.120	.450	1.340	1.54	
January . . . . .	6,000	580	12.10	1.170	520	140	1.050	.282	1,500	374	3.020	.754	1.620	1.87	
February . . . . .	14,500	525	29.20	1.060	405	184	.817	.371	1,730	327	3.490	.659	1.760	1.85	
March . . . . .	8,700	1,260	17.50	2.540	1,280	237	2.580	.478	2,730	736	5.500	1.480	3.620	4.17	
April . . . . .	7,200	2,600	14.50	5.160	1,700	505	3.430	1.020	3,670	1,190	7.400	2.400	4.440	4.95	
May . . . . .	11,600	1,300	23.40	2.620	762	188	1.540	.379	2,110	576	4.250	1.160	2.380	2.74	
June . . . . .	6,560	405	13.20	.817	3,440	105	6.940	.212	1,340	250	2.700	.504	1.470	1.64	
July . . . . .	8,200	415	16.50	.837	370	140	.746	.282	914	274	1.840	.552	1.030	1.19	
August . . . . .	7,550	230	15.20	.464	268	110	.540	.222	1,190	183	2.400	.369	.931	1.07	
September . . . . .	1,990	335	4.01	.675	236	120	.476	.242	484	204	.976	.411	.720	.80	
The year . . . . .	14,500	4,900	29.20	.988	150	40	.302	.081	1,090	704	2.200	1.420	871	1.760	23.86



## MIDDLE BRANCH OF WESTFIELD RIVER AT GOSS HEIGHTS, MASS.

*Summary of Daily and Monthly Discharge for the Ten-year Period ending Sept. 30, 1920.*

[Drainage area, 53 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Ten Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR TEN YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet. Square Mile.	Second- feet per Square Mile.			
October . . .	1,760	14.0	33.20	.264	24.0	—	.453	—	285.0	4.72	5.38	.089	55.9	1.060	1.22
November . . .	984	51.0	18.60	.962	48.0	2.0	.906	.038	179.0	12.20	3.38	.230	84.9	1.600	1.78
December . . .	1,040	30.0	19.60	.566	78.0	5.6	1.470	.106	159.0	18.00	3.60	.340	100.0	1.890	2.18
January . . .	965	41.0	18.20	.774	65.0	6.0	1.230	.113	211.0	20.20	3.98	.381	109.0	2.060	2.38
February . . .	1,810	50.0	34.20	.943	45.0	5.0	.849	.094	230.0	17.30	4.34	.326	92.1	1.740	1.83
March . . .	1,690	138.0	31.90	2.600	125.0	5.0	2.360	.094	413.0	60.50	7.80	1.140	245.0	4.820	5.33
April . . .	1,220	474.0	23.00	8.940	195.0	30.0	3.680	.566	445.0	122.00	8.40	2.300	289.0	5.450	6.08
May . . .	1,810	102.0	34.20	1.920	53.0	8.9	1.000	.168	251.0	41.00	4.74	.774	126.0	2.380	2.74
June . . .	877	9.4	16.50	.177	34.0	1.2	.642	.023	138.0	3.92	2.60	.074	57.5	1.080	1.20
July . . .	919	16.0	17.30	.302	18.0	—	.340	—	105.0	5.28	1.98	.100	27.6	.521	.60
August . . .	1,180	7.9	22.30	.149	13.0	.4	.245	.008	124.0	3.77	2.34	.071	28.0	.528	.61
September . . .	475	5.6	8.96	.106	15.0	.4	.283	.008	61.5	1.51	1.16	.028	24.2	.457	.51
The year . . .	1,810	880.0	34.20	16.600	7.5	—	.142	—	148.0	71.70	2.80	1.350	103.0	1.940	26.46



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